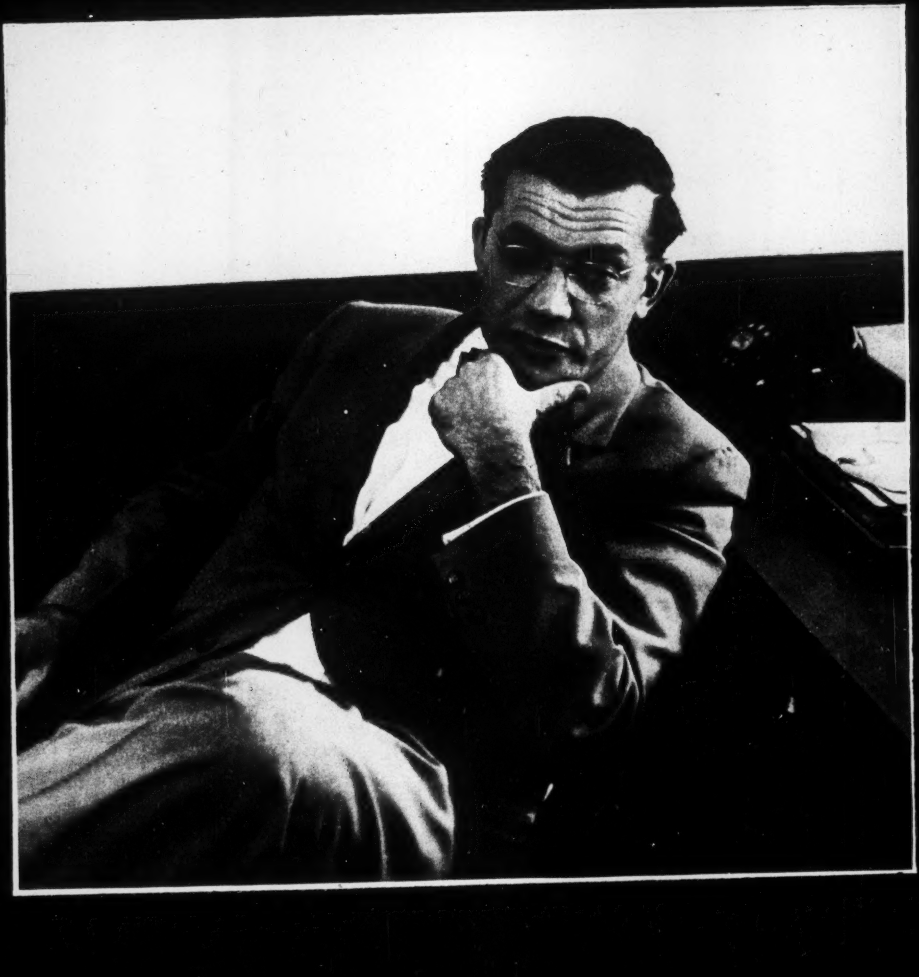
ENGINEERING NEWS-RECORD



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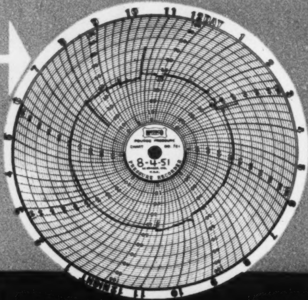
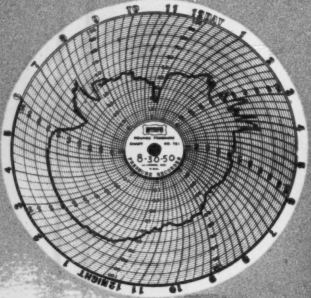
★

A McGRAW-HILL PUBLICATION

PRESSURE CHARTS TELL THE STORY

. . . OF A HORTON ELEVATED TANK

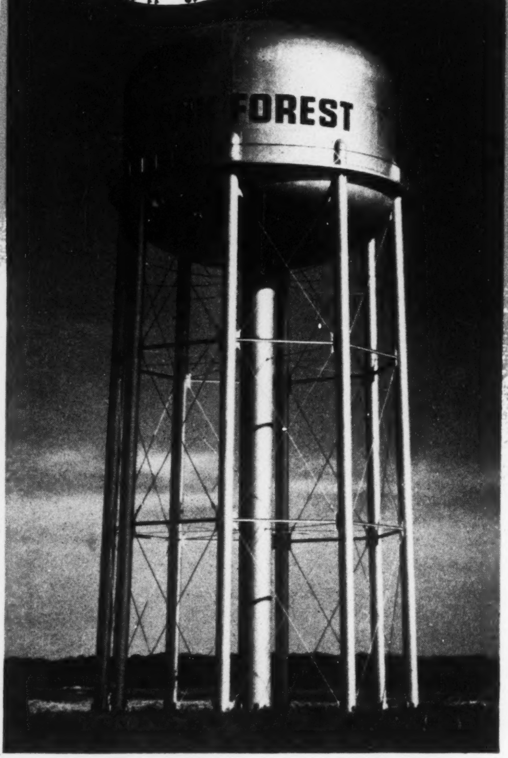




A glance at the charts reproduced above will show you how Park Forest, Illinois, improved the pressure in its water service with a 500,000-gallon Horton elevated water tank. Notice how distribution pressures went down during periods of peak demand before the Horton tank was installed . . . and how, after its installation, pressures have remained relatively uniform throughout the day.

An elevated water tank can do for you what it did for Park Forest. There is no reason to put up with pressure variations in your distribution system when elevated storage can eliminate them so easily.

Horton elevated water tanks with ellipsoidal-bottoms (similar to the Park Forest tank) are built in standard capacities from 15,000 to 500,000 gallons. Larger tanks with radial-cone bottoms are built in standard capacities from 500,000 to 3,000,000 gallons. Write for details.



Right: 500,000-gallon Horton ellipsoidal-bottom elevated tank built for Park Forest, Illinois. Consoer, Townsend & Associates were the engineers on this Horton tank installation, which helps the community keep distribution pressures uniform throughout this completely new system . . . even during peak load periods.

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"RIP COLLINS" says---

"RIP" COLLINS, a partner in **COLLINS BROS.**, Mechanicville, New York, keeps in touch with every phase of the job by Walkie Talkie. "Rip" believes in using only the most modern equipment to keep the work moving at a profitable clip.

"That high horsepower-to-yardage ratio in LaPLANT-CHOATE MOTOR SCRAPERS certainly pays off in fast loading and fast get-away"

"Rip" adds, "With the power we've got in these LPC rigs, we get 20 HP per struck yard of capacity, and that means a lot when it comes to loading fast and getting away. They're easy to operate, too, so we get high average production from our operators."

On a job like the one shown here . . . grading for a Delaware & Hudson Railroad spur to the Port of Albany Power Plant on the Hudson River at Albany, New York, and also grading and leveling a stockpiling area for the plant's coal supply . . . the Motor Scraper's power, big capacity and high speed really pay off in production.

EXTRA-PRODUCTION FEATURES OF TS 300 MOTOR SCRAPERS

BIG CAPACITY . . . 14-cu. yds. struck and 18-cu. yds. heaped for bigger pay loads.

HIGH SPEED . . . over 22 miles per hour cuts travel time.

RUGGED POWER . . . your choice of a 280 HP Buda or a 275 HP Cummins diesel.

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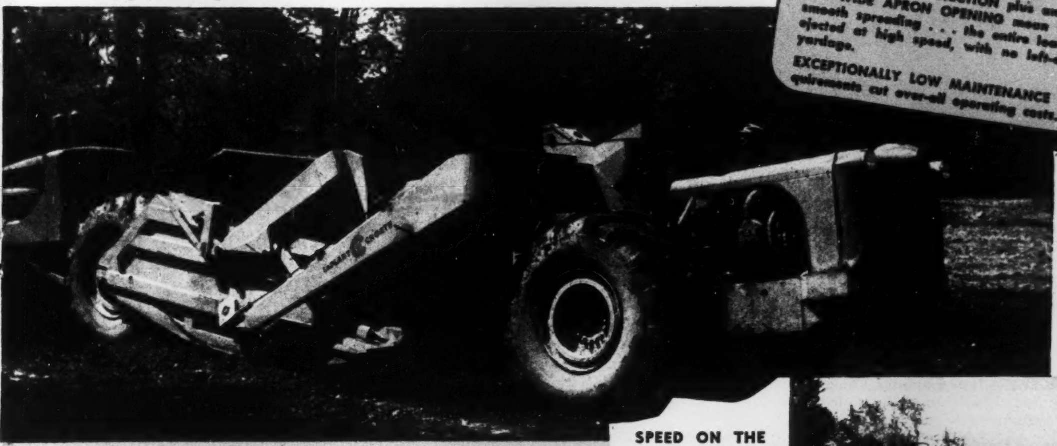
BIG 24:00 x 29 TRACTION TYPE TIRES combined with big power give plenty of pull in any kind of material.

POSITIVE FORCED EJECTION plus an **EXTRA WIDE APRON OPENING** mean fast, smooth spreading . . . the entire load is ejected at high speed, with no left-over yardage.

EXCEPTIONALLY LOW MAINTENANCE requirements cut over-all operating costs.



Ask owners like Collins Bros. about
MOTOR SCRAPER PERFORMANCE

There's sure to be a popular TS 300 Motor Scraper, or a fleet of them, on a job near your location. It will pay you to watch their speed and power on the job, get facts and figures from the men who own and operate them. Get in touch with your nearest LaPlant-Choate distributor today. He'll be glad to tell you where you can see TS 300 Motor Scrapers in action, and he'll explain *all* the features that make them first choice with so many contractors like Collins Bros.

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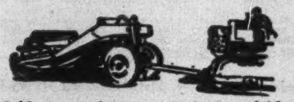
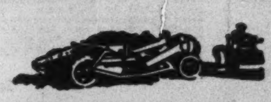
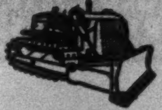


Cable-operated Scrapers in 6-, 8- and 14-yd. sizes for all makes of track-type tractors,



2- and 4-yd. Scrapers for track-type and rubber-tired industrial tractors.



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SEWAGE AND
INDUSTRIAL WASTE
ACCURATELY...
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STEVENS
RECORDER
TYPE B

Meet the threat of stream pollution with accurate data graphically tabulated with a STEVENS Flow Recorder. Complete flow records simplify task of treating wastes in compliance with anti-pollution laws.

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- **Standard circular chart automatically records 1- or 7-day periods.**
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ENGINEERING NEWS-RECORD

Member

Volume 149 September 18, 1952 No. 12

WALDO G. BOWMAN
Editor

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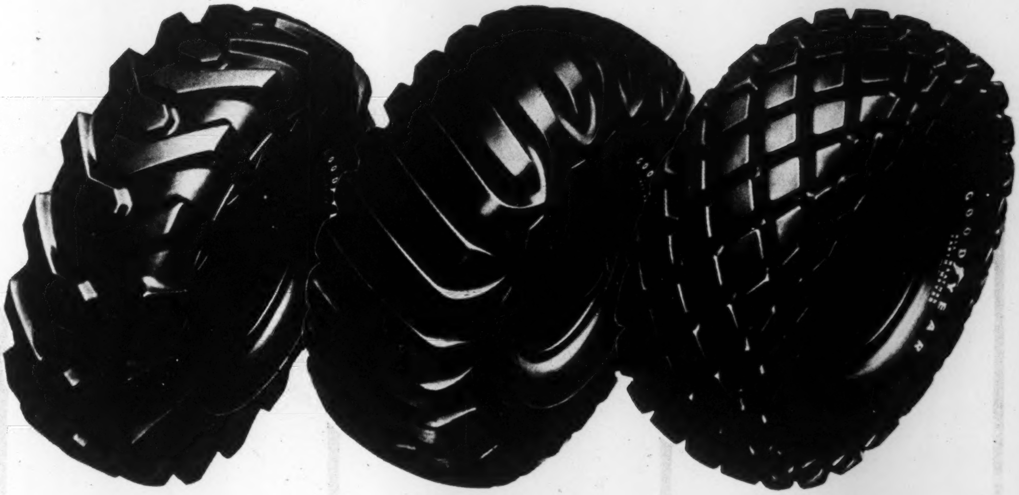
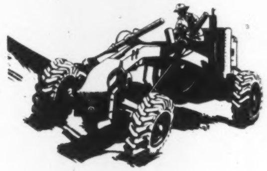
for getting costs down



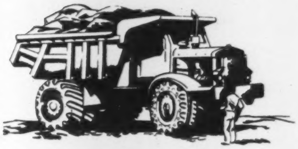
The SURE-GRIP for TRACTION

It's the top tire for drive-wheel traction on graders and pans



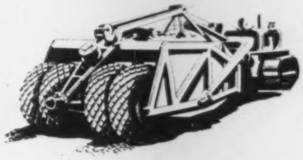
The HARD ROCK LUG for ROCK WORK

It's the super-tough champ for all kinds of tire-killing service



The ALL-WEATHER for FLOTATION

It's the earth mover that's finest for free-rolling wheels



That's why—**More tons are hauled on Goodyear truck tires than on any other kind**

Always Buy and Specify

GOODYEAR

—it pays!

Sure-Grip, All-Weather—T.M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

ROCK RATED!
P&H
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MODEL
955-A

P&H MAGNETORQUE* is the electric swing that never wears out

Just what does Magnetorque mean to you in this great 2½ yd. shovel? Simply this: It eliminates the old swing frictions with their constant headaches and replacement costs. It gives you the smoothest, slickest swing you ever saw—15% to 25% faster than any other machine of its size—and Magnetorque will last the life of your machine.

Add to this the rugged, rock-rated construction of welded high tensile steels—the smooth hydraulic control—the greater stability and digging power—and you have the greater output which means greater profit. Better get all the facts about this outstanding machine—companion to the famous P&H 1055 (3½ yds.). Ask about the P&H 955-A today.

*T.M. of Harnischfeger Corporation for electro-magnetic type clutch.

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Make your city look better with these strong, steel poles

● National Tubular Steel Poles can improve the appearance of your city in a hurry. These steel poles are slim and graceful because steel is so very strong. You can have greater height with a small pole diameter, therefore you have less visual obstruction—less safety hazard.

Steel poles are economical. When used to carry overhead lines, they can be spaced farther apart, so you don't have to use so many poles. Steel poles are easy to erect and, except for an occasional paint job, they require no maintenance.

When you're ready for new construction, get all the facts on these long-life, high-strength poles. National Tubular Steel Poles are actually pierced from a billet of fine steel . . . the one manufacturing method that results in uniform wall thickness without welds or seams of any kind. The finished tube is as sound as a solid forging.

For more information, write National Tube Division, United States Steel Company, 525 William Penn Place, Pittsburgh 30, Pa.

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"WS"*

FLEXIBLE PLASTIC PIPE

Tested and guaranteed . . . the new **CARLON "WS"** features heavy-wall protection against burst and collapse when handling high pressures or operating in a suction line. This flexible pipe saves time and cuts installation costs . . . yet lasts years longer than ordinary pipe. Use it for drinking water lines, sludge removal, drainage and irrigation systems, ventilating and cooling lines, hydraulic sluicing, concrete-encased conduit, or intake and exhaust piping.

The new **"WS"** pipe features all the advantages that have made **CARLON** the fastest-selling pipe on the market today. It is absolutely guaranteed against rot, rust and electrolytic corrosion, permits fast low-cost installation, and assures trouble-free service life even under the most severe operating conditions.

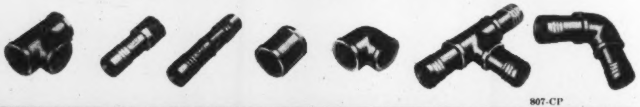
CARLON "WS" is flexible and furnished in long lengths . . . requires fewer fittings than ordinary pipe. It makes-up fast with plastic fittings which permit all-plastic systems or connection to previously installed metallic lines.

SPECIFY THE PIPE WITH THE STRIPE . . . TOMORROW'S PIPE TODAY.

Nominal Pipe Size	O.D.	I.D.	Working Pressures P.S.I. @ 120° F.	Weight Per Foot	Normal Shipping Lengths
¾"	1.170	.824	120	.216	400′ coils
1"	1.433	1.070	120	.285	300′ "
1¼"	1.850	1.380	120	.477	300′ "
1½"	2.260	1.610	120	.61	250′ "
2"	2.495	2.070	104	.79	200′ "
2½"	2.950	2.470	100	.82	150′ "
3"	3.670	3.070	100	1.28	100′ "
4"	4.820	4.030	100	2.20	25′ straight
6"	7.260	6.070	100	5.00	25′ "

*WATER SERVICE

ALL CARLON PIPE AND FITTINGS ARE FACTORY-TESTED FOR MORE THAN 8 HOURS AT GREATER THAN WORKING PRESSURES.



807-CP

CARLON CP

CARLON PRODUCTS CORPORATION

Pioneers in Plastic Pipe

In Canada: Micro Plastics, Ltd., Acton, Ontario
10300 MEECH AVENUE • CLEVELAND 5, OHIO

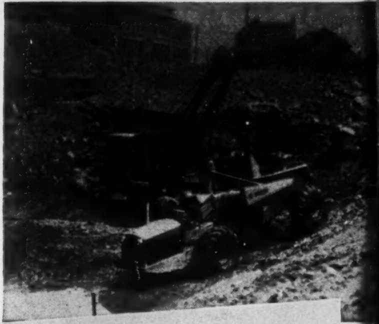
"Most versatile machine yet used," is how GLEN STEVENSON, of Babler Bros. & Rogers, Oregon, describes his 18-ton C Tournarockers. Their relocation of the Columbia River Hwy. above Bonneville Dam involved: (1) congested load areas, (2) travel through heavy traffic, (3) 1000 ft. of haul up 5% grades. Despite these conditions, 3 "C's" moved 1250 payyds. of dirt and boulders per 10-hour day.

"Tournarocker with blade saves us another unit on the dump. It sure is a time and cost saver," reports BILL LECKIE of his D Tournarocker with electric-control bulldozer blade. Working at a Bluefield, West Virginia coal mine, this unit carries 12 tons of slate refuse per load . . . completes 3000-ft. cycle over 7 to 10% grades every 2.3 minutes. A few times a day, the "D" also cleans spoil.

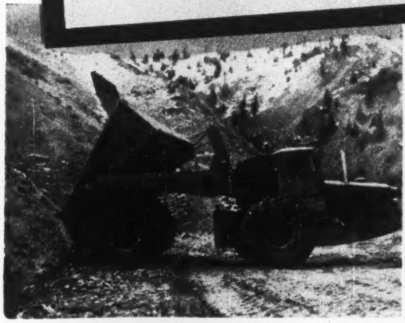
Here's what OWNERS say

"We're thoroughly sold on the Tournarocker. It maneuvers well on our works where tight quarters are the general rule," says A. C. HALL, president of Fort Hartford (Kentucky) Stone Quarry. Teamed with front-end loader, his 9-ton rig gets 7 yds. of shot rock in 2 to 2½ min. . . . hauls 300 ft. to crusher in 20 sec. . . . dumps, returns, and spots in 1 to 1½ min. 600-ft. cycle takes 4 min.

"Very well pleased with their performance," says FRED ONUPARIK, Connecticut, about Tournarockers on 70,000-yd. highway relocation. Loading in narrow, restricted areas, and hauling 1000 ft. over rough, rocky roads, two 16-ton rigs delivered 1200 pay yds. of heavy shot rock per day. Each Tournarocker took 8 to 10 passes from well-heaped 1¾-yd. shovel . . . carried 10 pay yds. per load.

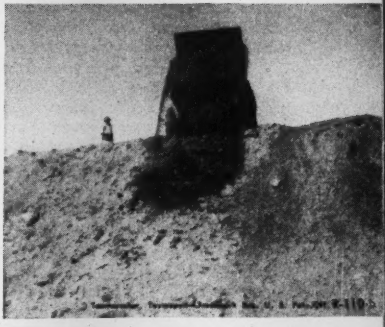


about rear-dump Tournarockers



"Tournarockers are working out very satisfactorily," reports JAMES B. GOODFELLOW, user of 3 of these 16-ton rigs on a 600,000-yd. highway relocation along rocky Pine Canyon near Wenatchee, Washington. On 1-mile cycles, his Tournarockers hauled 1000 yds. of shovel rock per 8-hour shift. Traveling over rough, narrow, winding mountain roads, rigs carried 9 to 11 bank yds. each trip.

"We're particularly impressed with the clean dump, the safety when the rear wheels are over the edge of the dump, and the extreme maneuverability of Tournarockers," says J. ROBERT BAZLEY, Pennsylvania owner of 3 "C's". Hauling 2100 ft., each rig strips 15 bank yds. of overburden every 7.4 min. Electric dump, fast spot let "C's" dump, move off fill ½ min. faster than trucks.



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For complete details on these jobs, or for facts on 9, 18, 35 or 50-ton rear-dump Tournarockers, see your nearest LeTourneau Distributor.

R. G. LeTOURNEAU, INC.
Peoria, Illinois

LETOURNEAU
LeT
EQUIPMENT

"John, this building of mine holds a cost-cutting *Tip-Off* from ONE BUSINESSMAN TO ANOTHER"

"What is it?" asked John, a prominent appliance manufacturer.

The contractor answered, *"Simply this: don't take your fasteners for granted!*

"An RB&W man showed me how a switch in fasteners could help me make field connections much more economically.

"He suggested switching from rivets to high strength bolts. They cost more than rivets initially, but the assembled cost is much lower. My men work faster than with rivets. The building goes up faster."

You, too, can find a cost-cutting lesson from this story, whether you're in construction* or any other industry.

MORAL: Look to your fasteners for an often overlooked opportunity to reduce costs, and strengthen your competitive position. New inventions, like RB&W's SPIN-LOCK Screw, may prove more efficient than the fasteners you're now using. Or you may save by the stepped-up production you get from using the finest fasteners . . . RB&W bolts, screws, nuts and rivets of uniform accuracy, dependability and physical properties.

Let RB&W help you make the most efficient use of fasteners on your assembly line. Address RB&W at Port Chester.

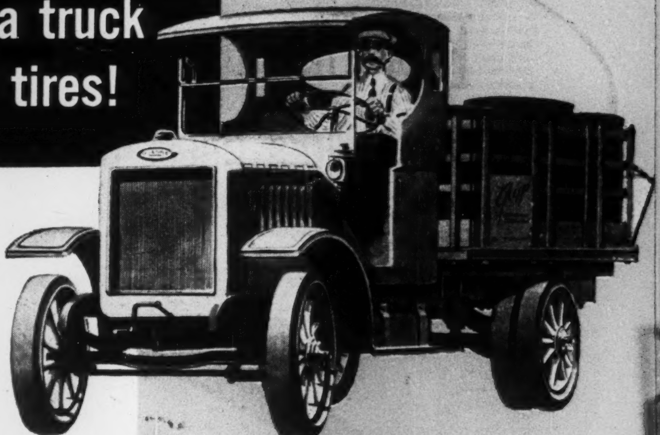
RB&W—The Complete Quality line. Plants: Port Chester, N. Y., Coraopolis, Pa., Rock Falls, Ill., Los Angeles, Calif. Additional sales offices: Philadelphia, Pittsburgh, Detroit, Chicago, Dallas, Oakland. Sales agents: Portland, Seattle. Distributors from coast to coast.

RUSSELL, BURDSALL & WARD
BOLT AND NUT COMPANY

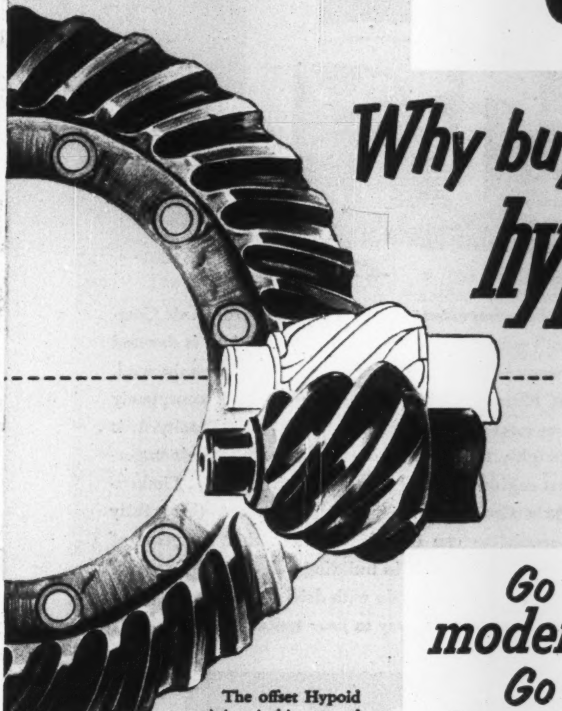
*If you're interested in construction, write RB&W at Port Chester for a free reprint of the recent article, "No More Riveting."

RB&W 107 YEARS MAKING STRONG THE THINGS THAT MAKE AMERICA STRONG

You wouldn't buy a truck today with solid tires!



Why buy *any* truck without **hypoid** axle gearing?



When you buy a truck, you want one that not only *looks* modern but *is* modern—all the way through! That's why it's so important to make sure that every truck you buy has Timken-Detroit Axles with Hypoid Gearing.

Designed and built to stand today's rugged work loads, dependable Hypoid Gearing is *tried* and *proved* by billions of ton-miles of operation. Even more important, Hypoid Gearing is a valuable aid in boosting profits—adds miles to the life of your trucks at lower maintenance costs.

The next time you buy trucks, GO MODERN—GO HYPOID! Specify Timken-Detroit Axles and Brakes!

The offset Hypoid pinion is bigger and stronger. Bearings are bigger. More teeth are in contact, reducing loading per unit of contact area. Torque-transmitting capacity is increased. Slower gear ratios are practical without loss of strength.

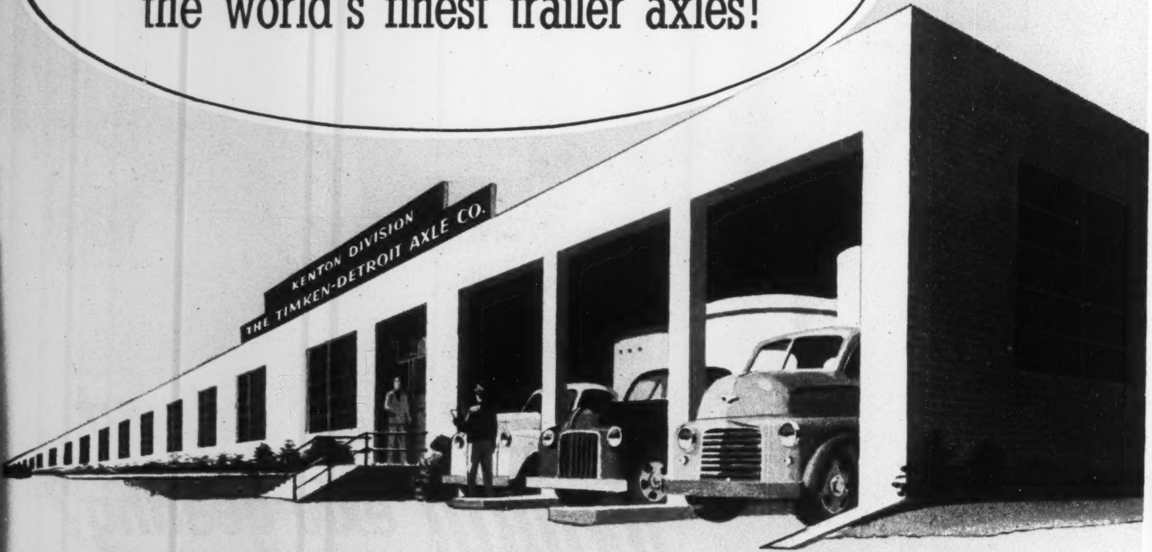
Go modern... Go hypoid!

TIMKEN Detroit AXLES
A PRODUCT OF THE TIMKEN-DETROIT AXLE COMPANY
DETROIT 32, MICHIGAN

The Accepted Standard
TRADE MARK REGISTERED

Only Timken-Detroit offers Hypoid Gearing in all three types of final drives . . . single-reduction, double-reduction, and two-speed double-reduction . . . in a complete range of capacities.

From this great plant come the world's finest trailer axles!



Before any trailer axle is put into production at Timken-Detroit's Kenton plant, months—and even years—are spent in designing, developing and testing. Shown above is just a portion of Timken-Detroit's engineering department.

Trailer axles are *important* at The Timken-Detroit Axle Company! That's why this great Timken-Detroit plant is devoted to developing and producing the finest trailer axles on the road. Located at Kenton, Ohio, this modern plant is completely equipped to mass-produce trailer axles of every capacity. It is staffed by highly trained technicians who have at their fingertips the vast engineering and research facilities of The Timken-Detroit Axle Company. Even more important, these fully qualified specialists can draw upon more than 40 years of Timken-Detroit experience in building axles for trucks, buses and trailers. Yes, just as they do with driving axles, so too, does Timken-Detroit point the way to *finer* trailer axles.

WORLD'S LARGEST MANUFACTURER OF AXLES FOR TRUCKS, BUSES AND TRAILERS

PLANTS AT:
Detroit and Jackson, Mich. • Oshkosh, Wis. • Utica, N. Y.
Ashtabula, Kenton and Newark, Ohio • Newcastle, Pa.

TIMKEN
Detroit
AXLES
A PRODUCT OF THE TIMKEN-DETROIT AXLE COMPANY
DETROIT 32, MICHIGAN

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READER COMMENT

Why so few engineers?

Sir: During the past few years there have been many articles on the reasons for the shortages of engineers. As far as construction goes the point has been missed: The pay scale.

Over the past 22 years I have run across many graduate civil engineers doing work as carpenters, bricklayers, concrete foremen and superintendents, salesmen, operating engineers.

An example—on the Chrysler Tank Plant at Newark, Del., the field engineer drew less than $100 (when room and board was paid). He worked seven days a week, 60 to 70 hours a week. He had to act as grade foreman for grading subcontractor; supervise installation of 84″ RC pipe, in addition to his own work on RR layouts, etc. The operating engineers (moving dirt, etc.) were paid $250 to $300 per week. Laborers in the ditch were making $100 or more.

Another example: Working the same hours on Fairless Plant (Morrisville) a party chief received $140 a week, a carpenter $160, bricklayers $225, etc.

How many college engineering students have been discouraged when, on summer work, they noticed these conditions? The thought "Why should a man go to college and spend four or five years?" has occurred to me many times.

F. S. McKee
Bordentown, N. J.

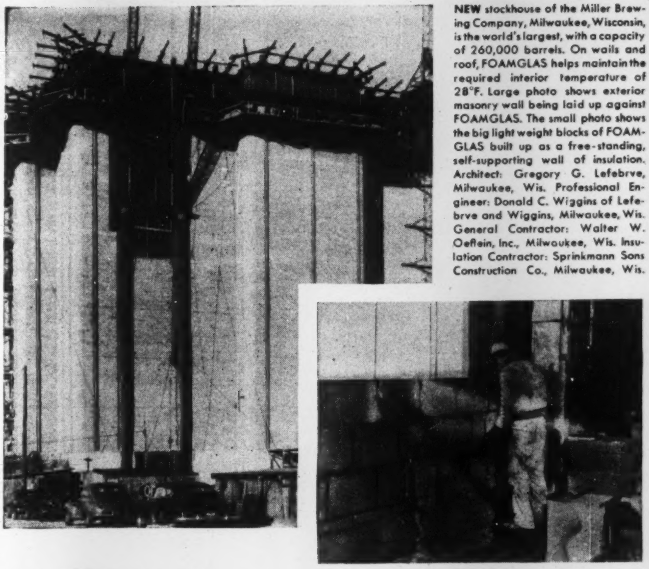
Wood research abroad

Sir: Readers of ENR may be interested in the papers presented at the joint meeting of the Austrian, German and Swiss Associations for Wood Research, which took place at Salzburg, Austria, June 16 to 21. Most significant were:

A paper on "Experiences with Nailed Construction," by F. Hartl, which makes a direct comparison between nailed trusses and nailed plate girders. It shows that the required amount of nails is 30 to 40% greater for nailed plate girders. In a comparison between nailed and glued construction, the advantage of nailed construction is indicated by the feasible use of sawn boards, which can be nailed together without any special equipment, while glued construction requires planed boards to be glued up in specially equipped yards and shops.

A paper on "Tests on Wood Ring

(*Continued on page 13*)



NEW stockhouse of the Miller Brewing Company, Milwaukee, Wisconsin, is the world's largest, with a capacity of 260,000 barrels. On walls and roof, FOAMGLAS helps maintain the required interior temperature of 28°F. Large photo shows exterior masonry wall being laid up against FOAMGLAS. The small photo shows the big light weight blocks of FOAMGLAS built up as a free-standing, self-supporting wall of insulation. Architect: Gregory G. Lefebrve, Milwaukee, Wis. Professional Engineer: Donald C. Wiggins of Lefebrve and Wiggins, Milwaukee, Wis. General Contractor: Walter W. Oeflein, Inc., Milwaukee, Wis. Insulation Contractor: Sprinkmann Sons Construction Co., Milwaukee, Wis.

Time meant money

—so they saved a year

• The Miller Brewing Company needed an enclosed, well insulated stockhouse, and they needed it right now. So, by erecting free standing walls of moisture resistant FOAMGLAS on the steel frame, the building was ready for operation nine to twelve months ahead of schedule, even before the masonry was completed.

In walls, on roofs and under floors, FOAMGLAS has proved the ideal aid for maintaining both normal and low temperatures. It is made of glass, which repels many destructive elements, so FOAMGLAS gives "good as new" service for years on end without costly maintenance.

Be sure that the lastest data on FOAMGLAS is in your file. We shall be glad to send you a sample of the material and copies of our latest booklets. Just drop the coupon in the mail.

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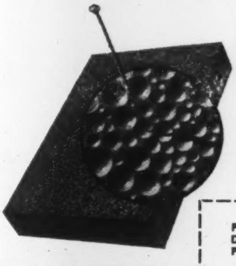

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the cellular glass insulation

The *best* glass insulation is cellular glass. The only cellular glass insulation is FOAMGLAS. This unique material is composed of still air, sealed in minute glass cells. It is light weight, incombustible, verminproof. It has unusually high resistance to moisture, chemicals and many other elements that cause insulation to deteriorate.

Pittsburgh Corning Corporation
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Pittsburgh 22, Pa.

Please send me, without obligation, a sample of FOAMGLAS and your FREE booklets on the use of FOAMGLAS for: Normal Temperature Commercial, Industrial and Public Buildings ☐ Refrigerated Structures ☐

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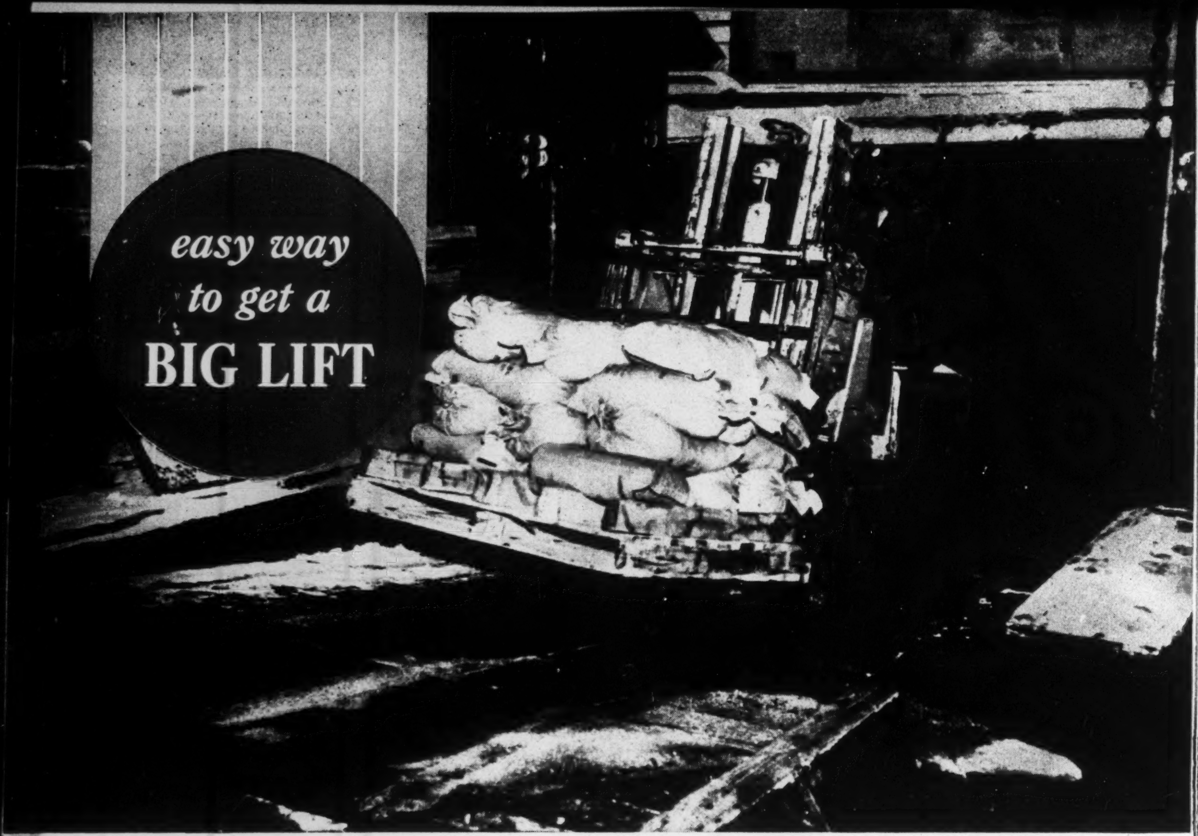


Photo courtesy Yale & Towne Manufacturing Company, Philadelphia, Pa.

damaging clutch shocks eliminated by Chrysler gýrol fluid coupling

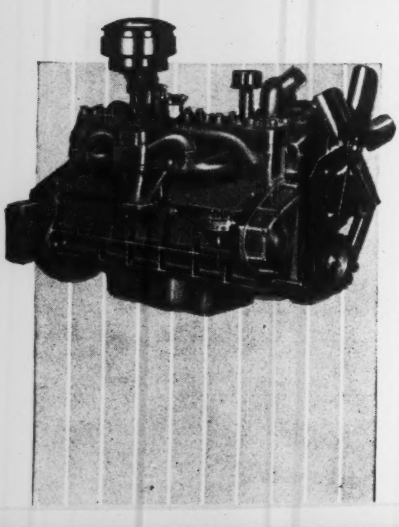
Replacing worn out clutches on fork trucks once made maintenance costs a troublesome problem. Then a leading manufacturer of material handling equipment brought the problem to Chrysler Industrial Engineers. They suggested gýrol fluid coupling on Chrysler Industrial Engines to eliminate shock and prolong equipment life. gýrol fluid coupling practically eliminated clutch maintenance, increased efficiency of the fork truck, and contributed greater smoothness in operation.

This is one more example of how Chrysler Industrial Engines are being engineered to do specialized jobs better. Wherever gasoline power is used for industrial purposes you will find many others.

Among the scores of special features available in Chrysler Industrial Engines are superfinished wear surfaces, sodium cooled exhaust valves, chrome top piston rings, updraft or downdraft carburetion and gýrol fluid coupling.

Chrysler Industrial power is not expensive. Production-line methods adapted to specialized industrial engine building, provide a custom-built industrial engine at mass production prices.

See a Chrysler Industrial Engine Dealer. Or if your problem is special, write us direct: **Industrial Engine Division, Chrysler Corporation, Trenton, Michigan.**



CHRYSLER

Industrial Engines

HORSEPOWER WITH A PEDIGREE

(*Continued from page 11*)

Connectors for Timber Joints," by E. Melan, which suggests bent laminated-wood and plywood rings as a replacement for steel split-ring connectors. The wood devices can, however, only be economically feasible when steel connectors are not available.

A paper on "Triangularly Trussed Structures," by R. Hess, which is an outcome of studies aiming at the most economical use of structural wood. The resulting joints are shop-glued under controlled conditions, hence, are only suitable for shop-fabricated trusses and trussed rafters. The savings of 60% of the timber required in standard construction is offset somewhat by increased cost of labor.

A paper on "Results of Recent Tests on Built-Up Compression Members as Performed in Karlsruhe and Stuttgart, Germany," by K. Moehler, which provides design data in diagrammatic form on glued, nailed, and connectored built-up columns.

Copies of these papers can be obtained by writing to Deutsche Gesellschaft fuer Holzforschung, Stuttgart-S, Germany.

E. George Stern
Research Professor
Virginia Polytechnic Institute
Blacksburg, Va.

Can snow loads be reduced?

Sir: I was very much interested in reading the summary of research entitled "HHFA recommends more realistic roof loads" (ENR July 3, p. 81), since it was I who first recommended that the funds be expended for these snow load studies.

It has been apparent for many years that the type, kind, duration, magnitude and effect of loads generally assumed for roof design are too often not properly gaged to working stresses. I refer to long-time loading vs. short-time loading and to factors of safety calculated on the basis of maximum "all-time history" load expectancy.

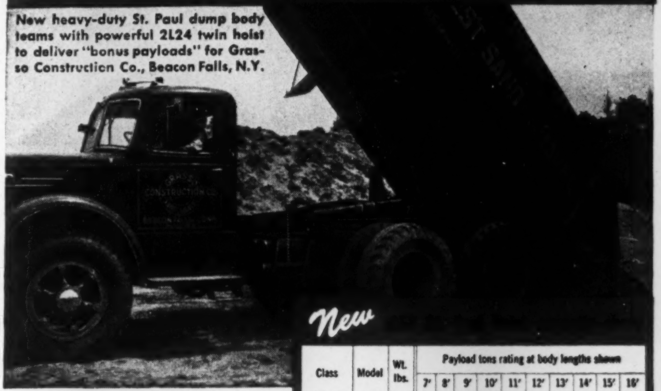
It is encouraging to see large areas of the country identified with roof loads of uniform magnitude and also to see recommendations by HHFA pertaining to uniformity of load reduction due to slope of roof. There is so little practical difference in the end result obtained with straight-line reduction from, say, 20-deg. slope, or 3 in 12 pitch, to 45, 50 or 60-deg. slope that it seems here is an area where a meeting of the minds of design engineers may be predicted.

One purpose of the research was to obtain, if possible, a relationship be-

(*Continued on page 14*)

COMPARE

St. Paul's *Added Values!*



New heavy-duty St. Paul dump body teams with powerful 2L24 twin hoist to deliver "bonus payloads" for Grasso Construction Co., Beacon Falls, N.Y.

New

Class	Model	Wt. lbs.	Payload tons rating at body lengths shown									
			7'	8'	9'	10'	11'	12'	13'	14'	15'	16'
Standard Duty 4 new models	D-16	550	7¼	6								
	H-16	650		9								
	H-18	735			9	8	7					
	H-20	795			11½	10	9	8				
Heavy Duty 5 new models	L-20	870			14	12½	11	10	9			
	L-24	1020				15	13½	12	11	10		
	2H20	1370				20	18	16	14½	13	11½	
	2L20	1555				25	22	20	18	16½	15	13½
	2L24	1695				31	28	25	23	21	19	17

Note: 6 new conversion hoists for platforms also available.

Up to 22% more payload capacity per dollar!

15 to 50% lower mounting costs!

Up to 300 lbs. less dead weight per unit!

Tear out this ad . . . use it to compare St. Paul's new "bonus capacities" with any other hoist on the market. You'll find St. Paul gives you *far more payload capacity per dollar of cost — at all body lengths!*

You'll also get more miles of smooth, trouble-free service — thanks to St. Paul's exclusive new uni-flex sub-frame, with full-floating tension rods, equi-lift strut arms and improved friction-free hydraulic system. See these great new 6 to 31-ton capacity St. Paul hoists and dump bodies at your St. Paul Distributor today — or mail coupon below for free literature.

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HYDRAULIC

ST. PAUL HYDRAULIC HOIST
Customer Service Department
36117 Main St., WAYNE, MICH.
Send free booklet describing new St. Paul hoists and bodies.
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Company______________________
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City________________State_______
S-HBC-4

Film purchase exposes

$23,200 Theft

(A true story based on Hartford File 121465)

About a year ago we took on a new bookkeeper. We were pushed for time so we put him to work without looking up his references.

Soon he began drawing Company checks for his own use. At first they were small. But before a year was up, they totalled more than $23,200.

Just before our annual audit was due, he quit. Before he left he had bought $200 worth of movie film for which he paid with a Company check. A call to us by the film supplier about a delivery slip-up led to our discovery of his embezzlements.

Before the police caught up with him he was 1200 miles away, and very little of our money was recovered. We might have had to stand the entire loss he caused but for one thing—our "Dishonesty, Disappearance and Destruction" insurance.

Because we had this policy, the Hartford Accident and Indemnity Company made good to us the full amount of our loss—$23,232.27.

No contractor ever knows when he may be faced by serious loss due to dishonesty, disappearance or destruction.

Under a "DDD" policy, you can be insured against losses of money, securities and other property due to dishonest or fraudulent acts by employees or others, or through theft, burglary and holdup. Forgery, or the alteration of outgoing checks, drafts or notes is likewise covered, as is destruction of money or securities by any cause.

Ask your Hartford Accident and Indemnity Agent, or your insurance broker, to explain in detail how a Hartford "DDD" policy can protect *you* and *your business*. And how little it costs in proportion to the coverage it provides.

Year in and year out you'll do well with the

Hartford

Hartford Fire Insurance Company • Hartford Accident and Indemnity Company
Hartford Live Stock Insurance Company • *Hartford 15, Connecticut*

READER COMMENT

(*Continued from page* 13)

tween weight of snow on the ground and weight of snow on roofs at the same time. It would be extremely helpful in obtaining concurrence on lesser loads for roof design (on a uniform equivalent area basis) if data had been developed on this apparently neglected but important phase of the problem. One is left with the feeling that one should use as design loads those weights calculated by the Weather Bureau as representing the weight of seasonal snowpack estimated to be equalled or exceeded one year in ten on the ground. There are many, however, who claim that weight of snow on roofs, especially when averaged over a large area, is generally less than weight of snowpack on the ground in undrifted adjacent areas at the same time. They believe data available on this subject, although not precise or complete, is sufficient to warrant a substantial reduction when ground snowpack is used as a basis for roof design. They feel that any probable overload would be of such short duration that present design practice would take care of it well within usual safety factors.

Roof loads, other than those caused by occupancy, are not generally classed as live loads. It is hoped that the terminology on p. 81, "Vertical Roof Live Loads," will not cause confusion in the application of certain proposed or printed reduction formulas for live-load determinations.

Recent studies of the writer on this subject indicate that the vertical design load assumptions could well apply to the actual roof surface presented (not to the horizontal projection of the roof as is specified in many codes), and that for maximum safe economy, flat or low-sloped parapeted roofs would justify somewhat larger design loads than similar roofs without parapets.

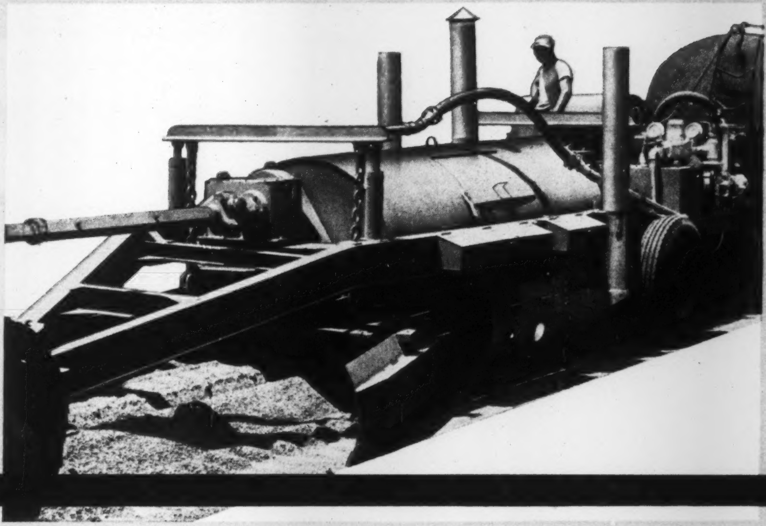
A similar presentation to stimulate discussion of existing data on wind forces would also be well worthwhile.

RALPH R. BRITTON
Conservation Engineer
National Production Authority
Washington, D. C.

Belt conveyors

The rock-crushing plant in which great flexibility had been obtained through use of belt conveyors that was shown on p. 40 of the August 21 issue of ENR was not identified in the caption. It is the plant of C. M. Lohr at Godfrey, Ill., which was designed and built by the E. F. Marsh Engineering Co. of St. Louis.—EDITOR.

Model 54 WOOD Roadmixer Saves $20,000 Per Mile on Wyoming Highway Job!



Big Horn Construction Co., using a Model 54 Wood Roadmixer, constructed 10 miles of soil-cement base course on the Gillette-East job, U. S. Highway No. 14, for **$200,000 less** than the lowest bid for gravel base course. Nearest available gravel was 100 miles from the project. By using native soil, the Model 54 Wood Roadmixer saved not only the cost of the aggregate, but also the time, equipment and manpower for importing it.

The Model 54 Wood Roadmixer is a complete traveling mixing plant. It is tractor-drawn and tractor-powered. It is equally effective on road oil or soil-cement mixes and will produce up to 2600 tons per 8-hour day **in a single pass.** On surface course and base stabilization jobs throughout the world, Wood Roadmixers are showing savings of as much as one-third over conventional methods and equipment.

That's why a Model 54 was used on Wyoming's first soil-cement highway job!

For literature and prices on the Model 54 Wood Roadmixer and other Wood Roadbuilding Equipment, see your nearest Wood distributor or write us direct.

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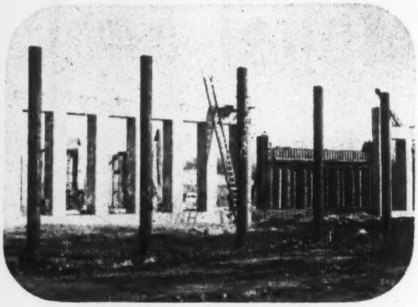
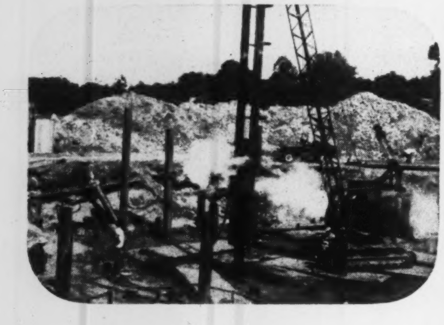
Piles for railway underpass.

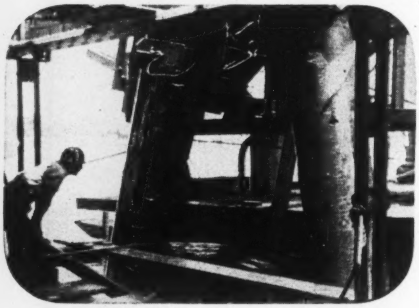


Piles for super-highway bridge.

Piles for sewerage treatment plant.



Piles for railway bridge.



Here's the "straight story" on pipe piles

Straight foundation pipe makes for successful driving. This is why so many contractors like Armco Spiral Welded Pipe Piles—they have exceptional straightness and roundness. Driving is easier, faster.

Strength is also an important advantage of Armco Pipe Piles. The tough spiral weld offers high collapse resistance and extra lateral stiffness even in the longest lengths. And because Armco Piles drive straight, the energy of the driving blow reaches the point with minimum loss. Driving time is saved; construction costs are cut.

Although amply strong, Armco Pipe Piles are light in weight for easy handling and hauling. Diameters range from 6 to 36 inches with a wide selection of wall thicknesses. And with these uniform diameters you can economically salvage cut-off lengths.

To make that next foundation job a real moneymaker, specify Armco Pipe Piles. For more data, write to Armco Drainage & Metal Products, Inc., 4342 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. Export: The Armco International Corporation.

ARMCO
PIPE PILES

ARMCO

THE CONSTRUCTION WEEK

- **New rules for labor due**—No matter who is elected in November, it's a safe bet that there will be a new labor law next year.

  Both parties are committed to changing five-year-old Taft-Hartley. Democrats by writing a new bill based on the Wagner Act, Republicans by amendments. Here's how they line up:

  Injunctions—Democrats would wipe them out; Republicans would keep them to some extent (by keeping the 80-day National Emergency ruling, limiting other injunctions to jurisdictional strikes or secondary boycotts).

  National emergencies—Democrats would drop injunction, substitute fact-finding and seizure. Republicans would keep injunction, add seizure.

  Closed shop—Democrats talk as if they'd restore closed shop, ban a closed union. Republicans would sanction union hiring halls in special industries, (such as construction) but not permit a closed shop generally.

  Secondary boycotts—Democrats think "unjustifiable" secondary boycotts should be outlawed, but not those "supporting legitimate union objectives"—and haven't drawn any line of demarcation. Republicans would hold present ban.

  On these points, there's agreement: unfair labor practice rules against both unions and employers will stay; jurisdictional disputes will be outlawed; free speech for both employers and unions will stay; non-Communist affidavits will be required of both employers and labor leaders.

- **What'll equipment cost?**—The full impact of price increases for steel won't be felt by buyers of equipment for quite a while—despite publication of general overriding Regulation 35 (pass along price regulation) by Office of Price Stabilization.

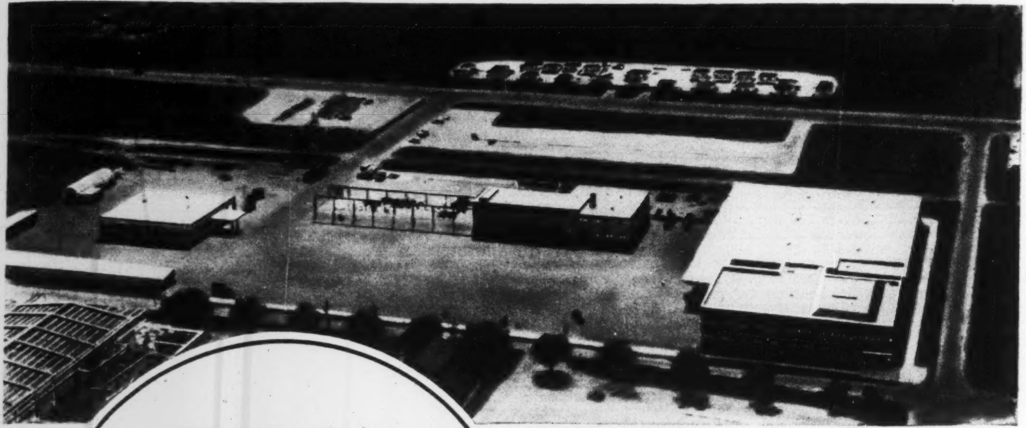
  Reasons are several: first off, producers will have to wait until they get shipments of higher-cost materials before they adjust their own ceilings; no dealer or manufacturer wants to start an upward price spiral right now—they would rather wait for the other man to do it.

  In any case, GPR 35 permits a manufacturer to raise his price by the dollars-and-cents he must pay in increases in prices of steel, copper and aluminum. So the price of a piece of construction equipment requiring three tons of steel could go up $15.60. If you buy through a dealer, though, you'll still have to pay the dealer's markup, applied on the fabricator's new market price.

- **Plenty of allotments**—Whether the actual steel is there or not may be a question—but there'll be no shortage of Controlled Materials Plan allotments to cover the last quarter of this year and first of 1953, according to NPA.

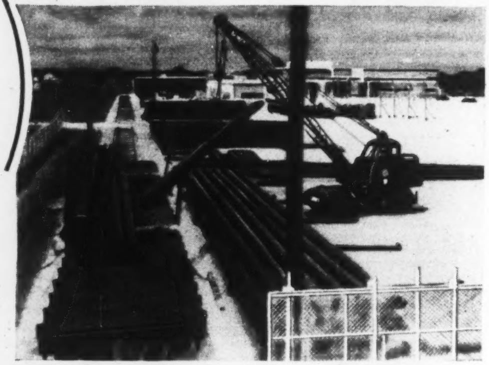
  The allotments of course will be in reduced quantities—fourth quarter tickets will be 80% of third quarter; first quarter 1953 will be 60% of third-quarter 1952.

  Fly in the ointment is a solid fact: The long steel strike built up an additional backlog of 985,999 tons of structural steel—566,000 tons of standard shapes, remainder wide-flanged. All industry will say about this extra load is that it "will be made up in good time." You take your choice on what that means.



Overall View of the New Service Center

SERVICE CENTER *for a* SERVICE COMPANY



Newest in materials handling design throughout

GULF STATES UTILITIES CO

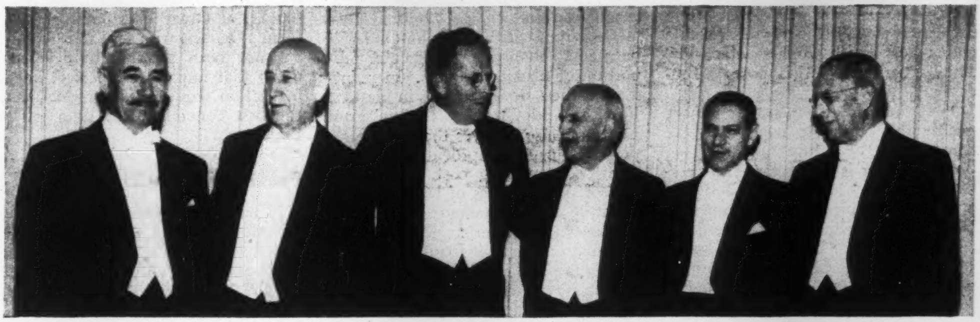
Headquarters for maintenance, purchasing, stores and stores accounting of the Beaumont electric transmission and distribution division.

The construction of this new Service Center at Beaumont, Texas, is one of many projects undertaken by Stone & Webster Engineering Corporation for Gulf States Utilities Company.

The new facilities include unloading dock and railroad spur, specially constructed yards for heavy equipment storage, the office building with auditorium and kitchen, the storehouse, a substation, garage, and paint shop.

STONE & WEBSTER ENGINEERING CORPORATION

A SUBSIDIARY *of* STONE & WEBSTER, INC.



ASCE HONORARY MEMBERS of centennial year symbolize the interdependence of engineers of all kinds and all nations in shaping our world. L. to r. Andre Coyne (civil) France; E. G. Bailey (mechanical) U. S.; Carlton S. Proctor, president, ASCE; C. J. Mackenzie (civil and educator) Canada; Ary Torres (civil) Brazil; and Harvey S. Mudd (mining) U. S.

Centennial speakers promise bright and exciting future

The advances in technology which have paced the progress of the United States in the past century will have their counterparts in the next 100 years. But future progress will be more costly in money, brains and effort because we will be building on a technology far nearer its ultimate than was the case in the past.

This is the bright and challenging promise that the nation's top authorities in all branches of engineering and technology unfolded at the Centennial of Engineering celebration in Chicago Sept. 3-13. Honoring the birthday of the American Society of Civil Engineers.

The ASCE celebration was a great success—large registration, well-attended sessions, good papers—but a somewhat lesser measure of achievement must be applied to the ambitious program planned to cover the century of achievement in all branches of engineering.

The pageant "Adam to Atom," depicting significant technical developments of the past drew enthusiastic capacity audiences, but the excellent daily symposiums on food, communications, energy, construction, health, education, transport, minerals, tools and urbanization—participated in by top leaders in these fields—lost out to competing technical sessions. Attendance was surprisingly small.

The third part of the general centennial program encompassed a luncheon and dinner. A resounding success was chalked up for the luncheon where the John Fritz Medal was awarded to Benjamin Fairless, head of the U. S. Steel Corp., and the Hoover Medal bestowed on Clarence Decatur Howe, Canadian Minister of Trade and Commerce, and where former President Herbert Hoover spoke. The dinner, featuring a speech by Charles F. Kettering of General Motors, as well as a following ice show, proved a disappointment—partly from an attendance standpoint, but principally because Mr. Kettering could not be heard above the noise of the ice show audience. Mr. Kettering's speech and the symposium papers are to be printed for wide distribution.

• **Attendance**—Overall, the 10-day meeting drew about half the 30,000 persons that advance publicity had predicted. However, most of the 60 technical societies that participated achieved their attendance goals, and the ASCE probably exceeded all of its more realistic estimates.

Throughout the sessions it was the down-to-earth, conservative kind of prophecies, rather than the spectacular, beyond-belief predictions that prevailed. Nevertheless, promises of solutions for some of today's vexing problems were not lacking. That they will come harder than some of the comparable steps of progress in the past, was a common expression of opinion. That they may not come at all if the incentives and freedoms that made past progress possible are abandoned or perverted, was repeatedly voiced. And that they may be achieved but reduced in usefulness by a lack of improvement in human relations, was a warning that was sounded by Mr. Fairless in his speech of acceptance of the John Fritz Medal, when he pointed out that his great new namesake mill in Pennsylvania will have to produce at capacity for 10 years to equal the tonnage lost in eight weeks of the recent steel strike.

"Human relations in industry is the biggest piece of unfinished business that the past bequeaths to the future," said Mr. Fairless, adding that the solution must be obtained without in any way impairing the basic liberties of either labor or management. A solution is possible, he predicted, if the government will confine its role in disputes to setting fair rules and then permitting and encouraging free and mutually cooperative bargaining to take place.

But assuming a continuation of our free enterprise system and a solution of the human relations problem, the engineers of today were able to look forward to a world progressively better to live in and to work in. As Willard Chevalier, executive vice-president, McGraw-Hill Publishing Co., expressed it in a keynote address, "The new frontiers of technology are no less challenging than the old geographic frontiers, and the opportunity is at hand to rebuild America to meet the aspirations of a people who never have been willing to accept for tomorrow the living standards of today." (For some of the things that these new frontiers of technology promise, turn the page.)

Bright future on new frontiers

The world of the future will operate in a more concentrated atmosphere of technology than anything we have seen in the past. It will require more engineers—or those who are available must work with higher efficiency. Thus a basic prediction poses a fundamental problem:

Will there be the manpower—more exactly the brains—to cope with the demands of the future?

One answer is to increase the effectiveness of each engineer by a supply of capable engineering aides provided by a modified educational system.

As Dean S. C. Hollister of Cornell envisions the future, the professional engineer would be educated at a higher level than is now customary. In addition there would be four-year college programs calculated to develop subprofessional personnel. All this would be outside of any extension of graduate studies, which would also be necessary in specific fields.

What about materials?

One of the first needs of these trained men will be materials to work with.

All the experts see these needs being supplied, but with increasing difficulty and at the expenditure of technology as yet undeveloped. We can look forward to the continuing predominance of iron and steel into the indefinite future. Aluminum is surely going to be our second metal. Magnesium should grow fast, too. The use of copper, lead and zinc will in no wise diminish, and nickel must continue to be produced in increasing quantity, even from marginal ores. The titanium industry will be a large one, and metals now regarded as "rare" will gain in economic stature. Germanium is one. Lithium, cobalt and beryllium are others. Certainly the production of uranium 235 and plutonium will continue to be a big business.

These are the conclusions of Zay Jeffries, vice president, General Electric Co., who also prophesies that "some day the nucleonics industry will be bigger than the iron and steel industry even in peacetime."

The need and use for non-metallic materials—concrete, glass, structural clay, plastics—will steadily increase, but few prophecies were ventured as to any new entrants into this field. However, plastics coated with evaporated metals, others reinforced by laminating metals, glass, paper, will be available for high strength and wear installations. Others with special light-transmitting properties will transform ceilings into luminous surfaces. Machine parts of plastics, such as nylon, will require less lubrication, weigh less, and reduce vibration over metal parts. Extrusion techniques will be used to shape a much greater proportion of plastic products. In pointing out these developments in plastics, Frank C. McGrew of the du Pont Company also believes that the better products can be provided at constantly diminishing cost.

Prof. W. C. Voss of Massachusetts Institute of Technology foresees improvement and price reduction in building elements, thanks to ever-wider use of plastics. Lightweight cored units made of wood, fabric and metals will develop phenomenally, and block construction, especially prefabricated, is bound to increase. Another MIT professor, Egon Orowan, says there is a strong possibility that stronger and more rigid metals can be made synthetically by compressing powdered metals.

New design practices

Structures of the future, because they will be required in such numbers and variety, will be produced by some changed design techniques, predicted Dean L. E. Grinter, University of Florida. Specificially, with machines available to solve all equations, it is likely that stress analysis of three-dimensional shapes and assemblages will be as common as the analysis of two-dimensional shapes or assemblages are today.

Moreover, standardization of many design practices must be expected to cope with volume production. This may restrict individuality but it will produce lower costs in man hours of work and net gain to the economy.

Construction will be bigger

Consistent with the idea of increasing mechanization, the men who are interested in field-construction advancement talked about improved machines and extension of their service into new fields. H. W. Richardson, Editor of Construction Methods and Equipment, foresees that plastering, bricklaying and plumbing—strongholds of handwork—eventually will be invaded by powered devices.

Machinery improvements will respond not only to pressure for more economical construction, but also to needs for bigger structures and greater stresses. We can expect, said A. N. Carter, manager of the AGC's highway division: higher-speed machines; greater operator ease; greater durability, with accompanying reduction in maintenance costs; and greater standardization of repair parts and of the equipment itself.

One item of equipment, the concrete mixer, was criticized by R. F. Blanks, of Great Western Aggregates Corp., Denver, who said that so far it has not been possible to develop a mixer that imparts the correct kneading action required for production of the best concrete. Here is a job for the future.

Prestressing will grow

Whatever happens to construction techniques in the future, those associated with the adaptation of concrete prestressing to American job conditions are certain to produce some startling results.

M. M. Upson, of Raymond Concrete Pile Co., told of labor-saving approaches to the prestressing problem. Upson predicted that grout-bonded prestressing wires will gradually supplant end-anchorage and become the only method used in the years to come.

Prestressed beams will take their place in bridges along with the concrete T-beam, steel stringer and the rigid frame, predicted J. C. Rundlett, bridge engineer, Massachusetts Department of Public Works. "We have found that the manufacture and stressing of these beams are comparatively simple operations and feel that no one should hesitate or have any questions about building one."

As evidence of the rapid growth of prestressed concrete in the U. S., Prof. Myle J. Holley, Jr., of Massachusetts Institute of Technology, pointed out that about 100 structures with prestressed beams, about ⅔ of which are in bridges, the remainder in buildings, have been erected to date. At least, another 100 are now in the planning stage. These data indicate a tenfold increase in prestressed concrete structures in one year.

Rear Admiral J. F. Jelley, Chief of the Navy's Bureau of Yards and Docks, predicted that prestressed concrete structures will be designed for continuity.

Charles S. Whitney, consulting engineer, Ammann & Whitney, predicted that future baseball and football stadiums will be enclosed with roofs of thin-shell concrete. He has designed a structure with a 500-ft. span to demonstrate feasibility of this construction. (Hangars have been built with thin-shell spans of 340 ft. in the U. S.)

While double-curved thin-shell structures may increase in popularity, the trend at present is toward cylindrical shells, Mr. Whitney said. Greater use of such shells, he believes, will be encouraged by simplified design tables that were developed by a committee of the ASCE and will be made available to designers in the next few weeks through the assistance of the Portland Cement Association.

Further on concrete construction, precasting techniques were discussed by Louis Corbetta, secretary of the Corbetta Const. Co., New York, who says that, in the U. S., on-site precasting will be found more advantageous than central-plant production.

Bolted steel joints coming

Professors N. M. Newmark, W. H. Munse and D. T. Wright, of the University of Illinois, predicted a bright future for structural joints with high-tensile bolts. Their tests indicated excellent performance under both static and fatigue loading. Fatigue strength is much greater than that of riveted joints they found.

T. R. Higgins, director of Engineering, American Institute of Steel Construction, and E. J. Ruble, structural engineer of the research staff of the Association of American Railways, predicted that structural engineers in the future will also use such prestressed high-tensile bolts to support loads in direct tension. The bolts would be prestressed in tension substantially above the calculated stress that they would be required to resist in service.

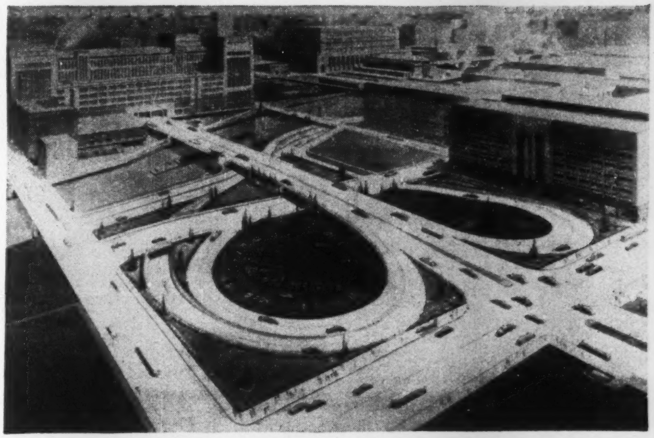
Bridges and roads

Bridges of greater span-length and magnitude than any yet tried are already in the planning stage. This is the assertion of D. B. Steinman, New York bridge engineer. A generation ago, the feasibility of a span of 3,000 feet was seriously questioned. Now suspension bridge spans up to 10,000 feet are practicable and may be expected.

More attention will be paid to bridge appearance in both line and color, Steinman says, even including luminous paints and spectacular lighting.

In highway construction, great strides will be made in eliminating friction between opposing lanes of traffic. Through atomic or chemical treatment, soils at hand will be changed into an entirely different type of material, capable of carrying the wheels of traffic of the future at reasonable cost.

The magnitude of wheel loads may be as high as 250 psi, according to Charles M. Noble, New Jersey Turnpike chief engineer, who also cited the promise of soil stabilizing chemicals like chrome lignin and sodium silicate. However, until chemical treatments become cheaper, heavier loads will have to be coped with by ever-greater attention to available natural subgrade materials and to the mechanical compaction.



TOMORROW'S URBAN TRAFFIC will demand still more space. This is an artist's conception of downtown connection for Chicago's Congress Street superhighway.

• Money is the highway keystone—Highway engineers and administrators alike, agree that road-building funds must be made available in much greater quantities than in the past if we are to make any significant progress in highway construction. Without sufficient funds, they agreed, today's economically unhealthy highway congestion will not only continue, but will increase in severity.

• Better traffic control ahead—The sheer volume of future motor traffic will give strong impetus to an accelerated effort in making use of existing facilities for handling it. These future methods of handling traffic, believes D. Grant Mickle, of the Automotive Safety Foundation, will include such innovations as electronic devices to change stop-and-go signal cycles several times during the day to accommodate shifting patterns of traffic.

Even radar or modified television may be used at strategic locations to advise a central dispatching office of unusual traffic congestion, so that emergency measures can be taken without delay. Curb-parking will disappear, and off-street parking structures will sprout plentifully in downtown areas.

Airports: no larger

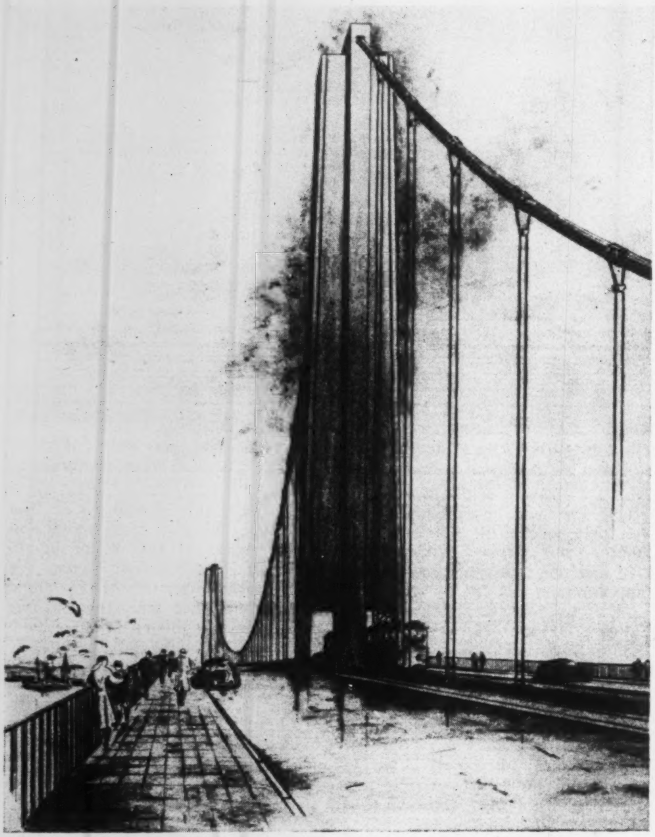
The airport that you land on 25 years from now will be no larger than the big ones of today. It can't be because the larger plots of land near cities are just too expensive. Nor will planes be larger than the present giants. Again it is the cost of the airport that is the deterring factor. We can't much longer continue to build runways and then scrap them as bigger planes make them obsolete. Nevertheless, the capacity of the airports to handle traffic will be much increased as a result of landing aids of much greater reliability and dependability.

These are the conclusions of such experts as John M. Kyle, chief engineer, Port of New York Authority, designer and operator of airports; Brig. Gen. John R. Hardin, Assistant Chief of Engineers for military construction, and D. K. Martin of the CAA. They also believe, either individually or collectively, that the military bases now being built near the North Pole will be used by peacetime aviation routes, and that the construction techniques that they have fostered give assurance that durable facilities can be built in the coldest climates; that hangars, aprons, and taxiways will continue to grow in size and extent even though runway lengths do not increase; and that there will be many fewer personnel required to direct air traffic because of the dependable automatic mechanism that will be perfected.

Other air transport predictions include: helicopter service between cities and rural airports; atomic power in noncommercial aircraft.

Cities: Is reintegration due?

City Manager L. P. Cookingham of Kansas City, Mo., offers four partial solutions to the critical problem that faces central cities that are being strangled and bled white by rapidly growing suburban areas. Three of



SINGLE-CABLE SUSPENSION BRIDGE, with roadways cantilevered out from center, is design departure proposed in Stockholm, Sweden.

these partial remedies are well known: annexation, creation of authorities, and functional consolidation (which Cookingham described as a watered-down authority) for specific services like fire protection or hospitals.

His fourth suggestion, not yet considered by many metropolitan areas, calls for both physical and functional consolidation into a single governmental unit to do away with tremendous duplication, waste and confusion. That solution requires forward-looking laws defining economic and social standards which would on the one hand justify or compel consolidation of dependent areas and on the other permit self-sufficient communities to remain independent if they wished.

No single solution can meet the needs of any metropolitan area, Cookingham pointed out. A combination of solutions will be necessary. Basic to the whole series of actions required for each area, in his judgment, is the creation of an overall metropolitan planning agency.

Waterways to expand

Waterway improvements in this country, both inland and maritime, must be continued at an accelerated rate to keep abreast of water-transportation demands during the next 25 years, in the opinion of Brig. Gen. C. H. Chorpening, Assistant Chief of Engineers for civil works, U. S. Army. He predicted waterway developments of the future to include: completion of the 12-ft navigable depth program in the Mississippi River and the development of similar navigation channels in other major streams; construction of the controversial St. Lawrence Seaway; deeper and broader harbor channels to handle larger importation of ores and other basic materials; and possibly the conversion of the Panama Canal into a sea-level route.

Power to pace progress

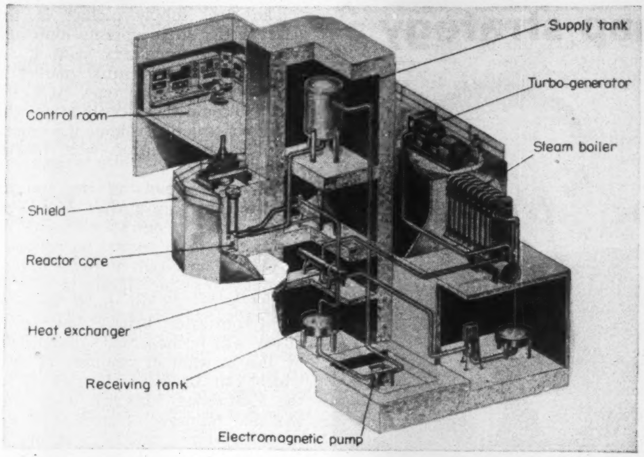
Replacing hand and brain power with machines, the reason for progress in the past will be the key to progress in the future. But while no lessening even of the acceleration of the demand for power to run the machines is yet in sight, the engineer's ability to match the demand with capacity is threatened by the facts of nature—dead-ends, Eugene Ayers of the Gulf Research and Development Co. calls them. One dead-end is technological, bound up with the laws of physics and chemistry. Thus while the replacement of the reciprocating engine by the turbine in 1900 reduced the coal requirement for a killowatt-hour of energy from 12 to 4 lb, subsequent advances have brought the figure down to 0.72 lb, less than a half-pound above the theoretical limit of possibility.

Other dead-ends are the supply of fuels and of hydro-electric power sites. Each is a diminishing resource. So, new conceptions of energy production and utilization are the hope of the distant future. Mr. Ayers lists some of the possibilities that research is grappling with: conversion of heat, and radiations in general, to electric power without the intervention of the steam cycle; transmission of heavy power by short wave lengths; massive storage of electric power and heat; and conversion of low-grade heat to higher grade. Some of these could evolve from the present energy picture, others are associated with the utilization of solar or nuclear energy.

The nuclear power plant

Right now it is possible to generate electricity from steam made from atomic heat—and it is being done with the Arco, Idaho Breeding Reactor—so that no clairvoyance is needed to predict the availability of atom power plants. The future will see them in service commercially if (1) the plutonium produced with the excess neutrons not needed to maintain the chain reaction from which the heat is generated can be sold to the government for military purposes, or (2) if such carbon fuels as coal and petroleum become scarce because of depletion or high cost. The latter possibility is probably decades away, so that only governmental subsidy can bring the atom power plant into commercial use.

The experts agree on this point since all their studies indicate atomic power plants will cost from $300 to $550 per kilowatt as against about $160 for the conventional coal- or oil-burning plant. This comes about because of the disparity in cost between



ATOMIC POWER PLANT—Breeder reactor and steam-electric generator will take about as much land area as today's plants, but will not be as tall.

the boilers and the carbon fuel on the one hand and the nuclear reactor, the heat exchanger and the chemical separation or decontamination equipment on the other. The disparity will be reduced, but it cannot be eliminated.

In contrast to the economic difficulties that beset the commercial production of electricity by the use of atomic reactors, the chances of an atomic-powered submarine are good because the great advantages are worth paying for. Somewhat the same thing can be said for the atom-powered airplane although the advantages are not so compelling.

Bigger dams coming

Public demand for full and efficient utilization of our water resources will require that many future dams be of the multi-purpose type, according to Gail A. Hathaway, of the U. S. Engineers. This means that dams must be larger on the average than in the past and probably that individual ones will exceed in size any dams heretofore built. The 726 foot height of Hoover Dam is by no means the maximum to which concrete dams can be constructed, nor is the 390 foot height (above the streambed) of Mud Mountain Dam the highest earth and rock-fill structure than can be built.

Many future improvements in design and construction procedures for these multi-purpose dams can be confidently expected.

Prestressed concrete will receive increasing attention and the massive head buttress type of dam will replace some of the more conventional types now in use in this country because of an economy of some 40% over standard gravity design sections and freedom from uplift, shrinkage, and heating and cooling transformations. Improvements in earth-moving equipment with attendant lower unit costs of embankments will place the large rolled-fill earth dam in a preferred position in many cases.

Sanitary: vast task ahead

"The expanding horizon for the engineer in the protection of health offers one of the greatest opportunities the world has seen," said Prof. Abel Wolman of Johns Hopkins University. And this forecast of increased demand on and for sanitary engineers was echoed by many others.

Much has been done; much remains to be done. E. Sherman Chase, consulting engineer of Boston, listed: reclaimed sewage, for water supply and other useful constituents, and reclaimed sea water, for the same purposes. How? Maybe through atomic power, ventured Mr. Chase.

Present water needs in the U. S. represent a future expenditure of over $2 billion; in sewerage, the next 10 years will demand spending $3 billion. And this is in the U. S., where modern sanitary engineering came into being, flourished and grew.

How about abroad? How much more vast is the field's future in lands without sanitary engineers, backward lands in the sense that they use inefficiently their natural resources and productive energies? Wolman likens the situation abroad during the next 25 to 50 years to the U. S. from 1850 to 1930, insofar as sanitation goes.

There must be willingness among U. S. sanitary engineers to work outside the country; development of backward areas abroad is a big future opportunity, said John A. Logan of the Rockefeller Foundation. In fact, said he, this work in backward areas will go down in the annals as the most important bit of history being made today—more important even than the cold war, the Communism vs. free-world conflict.

Integration of sanitary engineering with social and economic planning is vital to area-wide development, and it will be through the "correlating faculty" of engineers, especially public health engineers, that this integration will be accomplished, said Mr. Logan. Quoting Hardy Cross, he called engineers more humanists than scientists and emphasized the importance of sound human relations, economics and accounting in work to be administered by sanitary engineers. Assistant Surgeon General Mark E. Hollis called upon sanitary engineers to broaden their background in science and humanities, the better to lead public opinion, rather than follow it.

Future developments within sanitary engineering anticipated by Prof. H. B. Gotaas, U. of California, included these predictions:

(1) Stepped-up research at home and education abroad will result in refinement of principles and methods now practiced.

(2) Control of smog will be accomplished within the next few years.

(3) Water supply and waste disposal will be recognized as a single problem, just two parts of the same cycle, with resultant accomplishments in reclaiming wastes.

(4) Incineration of refuse will be limited unless heat recovery or cost reduction can be accomplished. The point of profitable return on composted garbage already has been reached in the U. S. and by 1975 some 65-75% of all household garbage will be ground and put in sewers.

Surveying by electronics

The future definitely holds forth the promise of electronic surveying, since much progress has already been made with wartime instruments not designed for survey use. Research into the applications of electronics has only begun, declared Carl Aslakson of the U. S. Coast and Geodetic Survey. Using speed of light, "the fastest tool in existence," it is possible to measure hundreds of miles within 10-ft accuracy—and error does not multiply with distance measured. Commander Aslakson sees this use of time to measure distance as certain to grow through improved instrumentation.

AGC leaders map strategy

You can look for more action in the controversy over the business relations between contractors and subcontractors. Long brewing at state levels, it erupted into the national picture during the last session of Congress. Introduction of a bill (S. 2907) sent scores of contractors and subcontractors scurrying to Washington (ENR June 12, p. 21).

Before a subcommittee of the Senate Judiciary Committee some of the ablest leaders from both groups debated the advisability of legislation to require contractors to name, with their bids for federal work, the subcontractors with the amount of their bids to be used when the award is made. The legislation was never reported to the full committee; but the issue is far from buried.

Last week at its regular mid-year meeting in White Sulphur Springs, W. Va., the Associated General Contractors heard a prediction from Welton A. Snow, manager of its building division.

Snow reported: "We can probably expect strong efforts in the future to obtain legislation similar to S. 2907, and locally in some states we may expect continued efforts for separate contract legislation as well as the establishment of bid depositories."

The AGC has long opposed separate contracts, naming subcontractors in bids, and bid depositories. As could be expected, they reaffirmed their stand for undivided responsibility of the general contractor. But something new was added.

In a formal resolution, AGC authorized "the officers and executive committee to initiate such cooperative actions as they deem appropriate directed toward establishing more harmonious relationships between specialty and sub-contractors and general contractors." It further recommended that chapters and branches take such action in their areas.

For AGC it was a decisive move, a promising peace overture. The resolution says AGC "is willing to take leadership to bring about just and harmonious relationships."

Whether the subcontractors' associations will respond remains problematical. Such organizations as the National Electrical Contractors Association, the National Association of Master Plumbers, and the Heating, Piping and Air Conditioning Contractors National Association, who sponsored S. 2907 still must receive authorization from the subcontractors they represent to meet with AGC representatives before anything specific can develop.

AGC President A. S. Horner presided at strategy talks.

• Targets for tomorrow—In other sessions AGC leaders busily prepared their heavy artillery for fresh action. Many old targets are scheduled to receive renewed pounding. High on the list are government controls, the ban against judicial review of government contracts, bid requests including alternate designs, and confusion on government wage policies.

A record $18 billion in new construction put in place during the first eight months of 1952 was reported, with a forecast that construction volume for the entire year is expected to set a new record of over $32 billion. Biggest share of the increase showed in expenditures for military and atomic energy facilities, while private new construction is expected to vary little from last year's $21 billion. Public outlays of nearly $11 billion were predicted, up 17% over 1951.

Nominated for next AGC president was C. P. Street.

The steel supply picture in the wake of the strike appears more optimistic than mobilizers paint it. A normal or nearly normal market is anticipated early next year. AGC believed it could more easily attain the record construction volume it predicts, if government controls were further relaxed.

"In various parts of the country construction activity has fallen off substantially. Contractors have reported that many owners do not want to become involved in the red tape necessary to obtain allotments of controlled materials for small projects. Many contractors believe that the industry will be benefited substantially by the increase of amounts of steel which can be self-authorized under the Controlled Materials Plan, and that the tonnages of steel used will not hamper the defense program," a report states.

When the NPA Construction Industry Advisory Committee meets Oct. 29, it can expect to hear its members from the AGC press for loosened restrictions.

• Other issues—During the last session of Congress, the AGC pushed vigorously for legislation to offset the effects of the Supreme Court decision in the Wunderlich case. Bills were introduced in both houses to restore the right of judicial review in disputes arising from departmental decisions on federal construction and other procurement contracts.

In the closing rush of the congressional session, the Senate passed S. 2487, but the bill failed to reach the floor of the House.

"The fact that the bill was passed by the Senate should make it easier for a new bill to be enacted next year by the new Congress," the meeting was told.

Progress was also seen in the AGC's fight to stop the practice of permitting bidders for Air Force projects to submit bids on alternate designs. AGC has been joined in opposition by the American Institute of Architects and the American Society of Civil Engineers. Their protest has been filed with the Defense Department and the Corps of Engineers.

Confusion in labor relations in the construction industry is blamed by AGC on "an excess of federal controls which are not guided by a clear-cut policy." As the situation stands today, there is little less than chaos under the Construction Industry Stabilization Commission.

Enforcement of CISC rules is hampered by slashed appropriations; uncertainty in an election year over the future of government wage stabilization efforts has caused administrative lethargy. Information on action is difficult, if not impossible to get.

"It is expected that federal wage controls must take some other direction after the elections, regardless of their outcome," AGC reports.

• Addenda – Contract renegotiation came in for some close scrutiny. Some AGC recommendations to the renegotiation board already have been adopted, others are still under study. Regulations and policies specifically for the renegotiation of construction contracts are expected.

Late this month or next month, the AGC expects the Office of Price Stabilization to issue a ceiling price regulation on rental rates for construction equipment. AGC expects they will be expressed in a formula.

Nominated for next president and vice-president of AGC respectively were C. P. Street, of McDevitt and Street Co., Charlotte, N. C. and John MacLeod, of Macco Corp., Paramount, Calif.

AFL building trades forge policies

The Building and Construction Trades Department of the AFL had business on its mind when it met in the big crossroads Hotel Commodore in New York City last week. Looming up was the coming (Sept. 15) meeting of the parent AFL. The expected lightning and thunder of that meeting precluded outright political speaking at this convention. So the convention turned its attention to its own industry problems:

Jurisdictional disputes;

The increased use of industry employees—such as the steel industry—to repair and even build new plant facilities;

Use of the cost-of-living index in negotiating wages;

An old agreement with railway maintenance-of-way employees giving them the right to construction and reconstruction work on the railroads.

Enforcement of the rule requiring the universal working card;

Whether to make the National Joint Plan for the Settlement of Jurisdictional Disputes a part of their constitution;

The Taft-Hartley act;

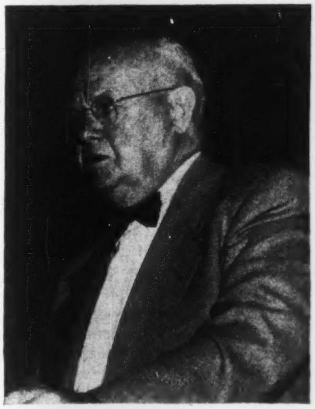
Election year voting by union membership.

• Welcome to New York–The local council of the AFL building trades provided the first day's speechmaking and welcome. Presided over by Howard McSpedon of the New York council, the convention:

Heard George Dandrow, President of the New York Building Congress, an employer organization, say: "You are to be commended especially for the very recent important strides you have made in your capacity and methods for effectively averting jurisdictional disputes."

Got a welcome from the head of the New York State Federation of Labor, Thomas A. Murray.

Got an exhortation from Martin Lacey, President of the Central Trades and Labor Council, to vote: " . . . and if we're going to stop being pushed around by a lot of political porch climbers, we'll have to cut begging on our knees, get up on our feet, and make our weight felt at the ballot box . . . ".



RICHARD J. GRAY presided over Building and Construction Trades Department convention.

Then the gavel was given to Richard J. Gray, president of the department, and committees were launched to undertake the real business of the convention.

• Second day meeting–The 300 members of the convention met again on Thursday morning and heard John J. O'Donnell, president of the National Constructors' Association.

In his talk, O'Donnell reminded the convention that NCA membership, who number the largest builders of steel, chemical and petroleum refining installations have a common problem with their membership.

"Certain individuals," he said, "in their eagerness to compete with recognized National Constructors, have advanced the argument that they build more efficiently and with less interruption because they recognize no unions and therefore have no jurisdictional disputes. Furthermore they point out that they have eliminated feather-bedding and minimized fringe benefits such as show-up time, travel time and travel expense. They boast openly of no obligation to contribute to union-sponsored welfare and pension plans. They . . . are not subject to restrictive provisions of union contracts.

"As a result . . . they claim to be able to construct . . . at greatly reduced cost.

" . . . Our continued employment of organized craftsmen will depend upon the individual productivity of the organized compared to the unorganized worker."

The high-point speech of the convention was Secretary of AFL George Meany's speech in which he called for political action to defeat the Taft-Hartley defenders.

• Down to business–The speechmaking over with, the convention promptly passed resolutions putting itself on record as believing these things:

- There has been a historical practice of the building trades to negotiate wage increases based on what, in their opinion, is a "fair day's pay for a fair day's work." In passing this resolution the building trades department rejected the use of the cost-of-living index as the sole determinant of wage increases.
- That the agreement, made in 1943, giving the Brotherhood of Railway Maintenance-of-Way employees the right to construct on railroad property should be rescinded. The ever-present fear of the encroachment of maintenance crews into the building field was evident in the passage of this resolution.
- That the joint board for jurisdictional disputes not be made part of the constitution. The reason for passing this resolution was said to be the unwillingness of the membership to allow the employers to exercise even a partial voice in writing the constitution of the trades.
- Reelected the officers and executive council of the organization by acclamation.

Summing up the work of the convention, Richard Gray and Joseph Keenan agreed that the jurisdictional disputes issue was the most important taken up.

As some of the speakers for management pointed out, it is considered one of the weakest links of the union-hiring employer.

Two turnpikes hit legal snags as work starts; North Carolina plans new one

Just as actual construction was getting underway on both the Ohio Turnpike and the West Virginia Turnpike, each project ran into legal difficulties last week that could delay or even stop construction.

In West Virginia the state's attorney general ruled that the present plan of building only two of the projected four lanes initially is not in accord with the act authorizing construction of the turnpike.

In Ohio, taxpayers who have long opposed the project filed suit in the U. S. Supreme Court to have that court set aside the Ohio Supreme Court decision validating the Ohio Turnpike Act.

• **West Virginia controversy**—Trouble for the West Virginia Turnpike has been brewing for some time, due primarily to the opposition of a local newspaper and the fact that the turnpike has become a political issue. Controversy over whether concrete or bituminous pavement should be used added fuel to the fire.

This 88-mi highway was planned originally as a four-lane divided highway through the West Virginia mountains from Charleston to Princeton, near the Virginia-West Virginia line. It is part of a projected new north-south highway (ENR June 19, p. 24). Preliminary estimates of the cost put the total at around $150 million, which was more than was justified by the potential toll revenue. Consequently, the current plan of building only two lanes of pavement initially, with a third lane for trucks on steep grades was involved.

That project was estimated to cost $96 million which could be financed by tolls, according to the engineers' traffic studies. In April of this year $96 million in 3¾% bonds were sold to a private banking syndicate.

Unfortunately, no test of the constitutionality of the turnpike act was considered to be necessary by the bankers.

It is reported that a lawyer for one of the railroads that are opposed to the project came up with the idea that building only two lanes initially violated the act, which states that a four-lane divided highway is to be built. The attorney general supported that conclusion, and as a result Gov. Okey L. Patteson has ordered the West Virginia Turnpike Commission to comply with the act which created it.

Plans are being made by the commission and the bondholders to have the appellate court pass on the attorney general's ruling, thus making possible an early decision by the state's supreme court.

A contract for initial work on the project was let late last month to C. E. Wetherall Co., Huntington. It totaled $391,367 for grading, draining, and bridge substructures. Work is in progress. New bids for another section of roadway are scheduled to be opened Sept. 30.

• **Ohio's legal trouble**—The Ohio Turnpike Commission's new troubles spring from the opposition of a few people near Maumee who hold that to have the turnpike pass close to their property would depreciate its value.

Earlier this year they filed suit in the Lucas County Common Pleas Court in an attempt to block construction. When that failed they tried to intervene in the "friendly suit" filed in the Ohio Supreme Court to establish validity of the commission's bonds before they were sold. That court refused them, and later upheld the constitutionality of the turnpike act.

Now the same people have started suit in the U. S. Supreme Court to have the Ohio court's decision set aside. What action the Supreme Court, now in recess, will take will not be known until October. In the past it has not been receptive to efforts to set aside state decisions.

Meanwhile, on Sept. 8, without fanfare, actual construction of the Ohio Turnpike was begun a few miles south of Cleveland. There, J. L. Harper & Co. of Cleveland began test borings for piers for a bridge.

• **New turnpike planned**—The North Carolina State Turnpike Authority, last week voted to build a 125-mi toll turnpike from the Virginia line near Mount Airy to the South Carolina line near Gastonia if engineering studies show it feasible.

If the toll road plans go according to the authority's schedule, the first bonds would be put on the market early next spring, and the actual work started by next fall. The exact cost is yet to be computed but the authority has estimated that a bond issue of $200 million would be adequate to complete the job.

Employed to make the surveys were Howard Needles, Tammen and Bergendoff, and Coverdale and Colpitts, both of New York. The former will make a cost study and the latter will handle the traffic survey. The surveys will begin immediately and are expected to be ready for authority consideration in about 60 days.

First Securities Corporation of Durham, N. C., and Byrne and Phelps, Inc., of New York, were retained by the authority to handle bond sale.

The proposed turnpike would roughly parallel heavily-traveled U. S. 29 for much of its length and from the Virginia line the route would be carried across Virginia to a point near Princeton by a Virginia Turnpike agency and there linked with the turnpike being constructed by West Virginia. Eventually, the route would tie into an Ohio turnpike.

• **New Florida move**—Florida's state road board last week authorized two further engineering studies of the proposed $275-million turnpike from Jacksonville to Miami, with a spur to the Tampa area.

The project was recommended as financially feasible by Parsons, Brinkerhoff, Hall and Macdonald in an earlier report on the state's overall highway needs. The same firm has now been retained to draft by Dec. 1 a preliminary engineering report for the toll road project at a cost of $70,000. Coverdale and Colpitts was retained at a cost not to exceed $30,000 to draft a report on potential traffic and earnings and submit by Dec. 15.

Meanwhile the Florida road board set up within the state road department a new division to handle toll road and bridge projects. The division was formed when the state road board began to consider toll rates for the Arlington Bridge, part of the $50-million Jacksonville Expressway. The bridge is expected to be opened in December. Ralph Hartsfield, secretary of the road board, was made acting director of the new division, and state highway engineer Sam Turnbull was named acting engineer.

• **Maneuvers in Oklahoma**—To avoid delays due to shortage of structural steel, P. F. Blair & Son, Tulsa, Okla., was authorized last week by the Oklahoma Turnpike Authority to draw up contracts for prestressed concrete beams to replace steel in construction of 11 bridges on the Turner Turnpike between Tulsa and Oklahoma City.

Blair estimated that material for the bridges would cost about $220,000. Cost of material plus anticipated increases in erection costs was expected to boost the price stipulated in present contracts by about $40,000.

Before the negotiations were complete, Capitol Steel and Iron Co., of Oklahoma City, notified the turnpike authority it had succeeded in getting mills to roll 1,000 tons of structural steel for turnpike bridges during the third quarter as originally planned. The authority dropped its plans for the prestressed bridges.

NPA molds new construction rules

The National Production Authority plans to revoke order M-100, covering housing, within two weeks. Its provisions are to be put in CMP Regulation 6 (construction). At the same time, these control relaxations will be made:

1. Home builders will now be allowed to use inventory on hand prior to Oct. 1951.

2. Self-authorization allowances will be boosted effective April 1953:

(a) For 1-4 family houses, per dwelling unit—1,500 lbs of structural steel in addition to materials now permitted. At present, 275 lbs of aluminum, 200 lbs of copper, and 2,300 lbs of carbon steel are permitted for homes with steel pipe water distribution systems; and 275 lbs of aluminum, 400 lbs of copper, and 1,950 lbs of carbon steel for homes with copper pipe water distribution systems. The present extra copper allowance for forced hot water heating and radiant heating will be unchanged.

(b) For multi-unit residences (walk-ups), per dwelling unit: two tons of carbon steel (not to include more than 500 lbs of structural), 200 lbs of copper, and 275 lbs of aluminum. At present, no self-authorization is permitted for this type of construction.

(c) For multi-unit residences (elevator-type), for dwelling unit: three tons of carbon steel (not to include more than 600 lbs of structural), 225 lbs of copper, and 275 lbs of aluminum. No self-authorization for this type of construction is now permitted.

NPA says the revocation of M-100 and the shift of its provisions to CMP Regulation 6 is a move to simplify the construction-controls mechanism. This is in line with the Associated General Contractors' proposal that all construction controls be covered in one general regulation. AGC was against M-100 in the first place.

The National Association of Home Builders, on the other hand, objects to NPA's intention, calling it "unreasonable." NAHB was largely responsible for M-100's issuance. It feels that home builders' particular interests can be covered in a simple and special regulation apart from the general construction regulation.

Says NAHB: "If NPA did away with the comparatively short order, M-100, home builders would then have the job of getting acquainted with CMP-6, a very complex and lengthy regulation of some 45 pages."

VA imposes moratorium

Regional headquarters of the Veterans Administration in Washington, D. C., this week is studying a builder-by-builder survey of violations of VA housing rules in the Washington metropolitan area.

The action results from last week's complete suspension of second and third inspections by VA inspectors and a ban on processing any second and third inspection reports already in the works—whether or not VA inspectors have approved of the house.

The unprecedented stop-order involves an estimated 5,000 homes and about 100 housing projects under construction. James W. Pearson, executive director of the Home Builders Assn. of Metropolitan Washington, estimated that from 300 to 800 home sales were uncompleted last week because of the VA order.

The action of the Washington regional office of VA follows on the heels of a blistering report on such violations by the Teague committee of the House of Representatives, which held hearings on complaints about the situation in the Washington area.

Spokesmen for the regional VA office, emphasize, however, that the suspension follows logically from their own checkups on the situation. They point out that as far back as last September builders were called together and told to "follow the book" or else.

The suspension on VA approval of GI home sales theoretically is "indefinite." However, by the end of last week, project-by-project reports by inspectors were being processed in the regional office. The plan is to give individual builders a go-ahead when officials are satisfied that their houses conform in every respect with VA regulations.

The Teague committee, among other things, declared that VA should refuse to appraise and guarantee loans on any new housing which is not constructed in accordance with VA's minimum construction standards. Local VA officials have now decided to insist on total compliance on every single house being built in the area.

As things stand now, only first inspections are being made—that is, those made when footings or foundation of the building are put in.

However, as each project is appraised, the builder is to be informed as to violations of the code before the second inspection (when the roof is put up) and the third inspection (when the house is completed).

Credit relaxation may help construction

The government this week suspended all emergency credit controls on home building and nonresidential (commercial) construction.

Lifting of Regulation X and its counterparts is expected to exert a mild stimulus on housing that sells for $12,000 or more. Because of the steel shortage and high building costs, the effect on commercial construction may be slow in developing.

Major relaxation in down payment requirements was announced by the Veterans Administration for houses financed with VA-guaranteed mortgages. GI homes may be purchased, as before, with no down payment on houses costing up to $7,000.

From $7,000 to $8,400, the VA down payment is now reduced to 4%, while on houses costing more than $8,400 it is only 5% . Until this week, the VA required down payments ranging from 4.8% for an $8,000 home to 35% for a $25,000 house.

Minimum down payments on houses financed by insured mortgages of the Federal Housing Administration are fixed by law. This week, FHA reduced requirements to the legal base, ranging from 5% on houses under $7,000 to 20% on higher priced dwellings. The maximum loan FHA can insure is $14,000. Previously, the required down payments had ranged up to 40% on a $25,000 house.

• **Results**—In removing Regulation X, the Federal Reserve Board pointed out that conventional mortgage loans remain subject to basic state and federal statutes governing real-estate loans by financial institutions. Under these laws, most institutions can lend no more than about two-thirds of the value of a home or commercial property.

Regulation X required a 50% down payment on commercial building—offices, hotels, stores and amusement construction. Private lenders now will set their own limits on the amount of mortgage loans, subject to state laws. In general, they will require down payments of about one-third on commercial construction.

No wave of office and hotel construction is looked for as a result of the change. Steel supplies will have to improve and building costs settle down before any great upsurge is likely to occur. In projects such as shopping centers, however, the effect may be felt quickly.

On housing, the immediate influence will be moderate. The seasonal downturn in housing starts this fall probably will be less than would otherwise have occurred.

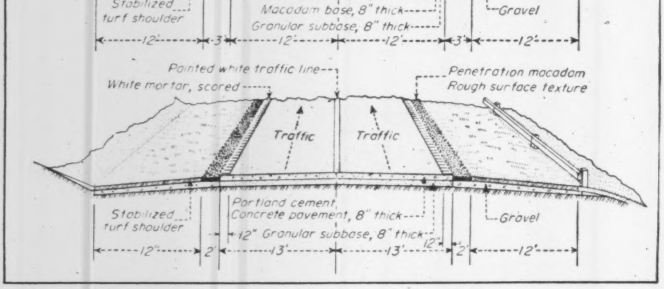
COMPLETED SECTION of the Garden State Parkway to the west of Elizabeth where traffic now averages over 20,000 cars a day.

Authority created to finish parkway

CONSTRUCTION of the Garden State Parkway in New Jersey has been taken over by a new agency, the New Jersey Highway Authority, and that authority let its first construction contracts Aug. 21. Heretofore all work on the parkway has been under the New Jersey State Highway Department.

The Garden State Parkway, when completed, will extend through practically the entire length of the state from near the New York State border to Cape May at the southern tip, a distance of 180 miles. It is being built to provide some of the suburban communities in the northern part of the state with a badly needed north-south through highway and to give all that suburban area better access to the coast resorts.

To date, 15.2 mi have been completed and 9.2 mi are under construction. That work was done by the State Highway Department as part of its regular federal-aid program. The new work just let to contract covers completion of the interchange with State Route 29 (Sect. 4 on the map) and grading and bridge work for 1.3 mi north of that point.


Painted white traffic line
Grey concrete, scored, 6" thick
Traffic
Traffic
Stabilized turf shoulder
Bituminous concrete, 3" thick
Macadam base, 8" thick
Granular subbase, 8" thick
Gravel
12'
3'
12'
12'
3'
12'
Painted white traffic line
White mortar, scored
Penetration macadam
Rough surface texture
Traffic
Traffic
Stabilized turf shoulder
Portland cement
Concrete pavement, 8" thick
12" Granular subbase, 8" thick
12"
Gravel
12"
2'
13'
13'
2'
12'

TWO TYPES OF PAVEMENT have been set up in the design standards. Each includes a roughened strip along the pavement edge to warn drivers that they are close to the shoulder.

Because of the long period that would be required to complete the parkway as part of the state's federal-aid program the state legislature, earlier this year, passed an act authorizing creation of the New Jersey Highway Authority to complete the parkway as a toll facility, thus making possible its financing outside the state highway budget.

At the same time the legislature authorized a bond referendum at the fall election to sanction putting state credit back of $285 million in bonds to be issued by the New Jersey Highway Authority, thus making possible an interest rate lower than for bonds backed only by revenues from the parkway. A saving of $70 million in interest and amortization cost is anticipated if state support for the bonds is approved.

- **Special toll provisions**—No tolls are being collected at present on the completed sections of the parkway, and under the act setting up the new authority one section of the parkway is to be exempt from tolls for local movements because the parkway will traverse a road now used for local traffic.

Similarly, in the southern part of the state, the parkway will be open to trucks as well as automobiles. This is being done because the single existing two-lane highway is old and overloaded, making a new free highway serving all types of traffic a necessity. Also, there will be few trucks on that part of the parkway over weekends when pleasure traffic will be at a peak.

• Parkway design—Design standards were developed by the State Highway Department as a preliminary to start of work on the completed sections of the parkway. No radical changes in them are contemplated for the work now being undertaken. Those standards call for a limited-access highway with a landscaped right-of-way having a normal width of 500 ft, and having opposing lanes of traffic separated by a median zone of varying width. This will permit fitting the layout to the local topography.

Grades on such a parkway are not as important as on a normal-use highway, but they are to be limited to three percent or less except in the hilly country inland from Atlantic Highlands.

All intersections with other highways are to be separated. Entrances and exits are to be provided at all intersections with other main highways from which a considerable flow of traffic can be expected.

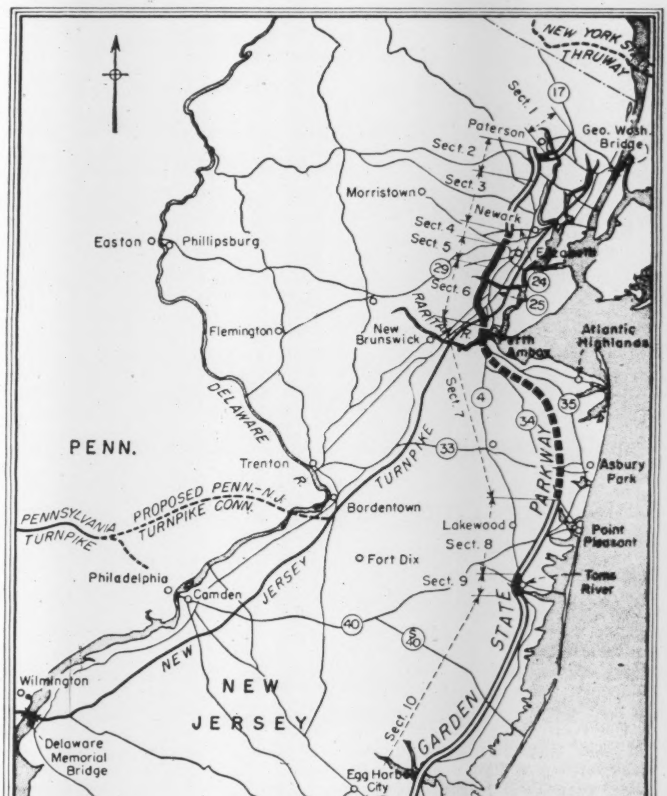
• Two pavement designs—Designs for two types of pavement have been set up for the new work, as shown in the accompanying drawing. One calls for 3 in. of bituminous concrete on an 8-in. macadam base supported on an 8-in. subbase of granular material. The other design provides for 8 in. of portland-cement concrete slab on a similar subbase.

Noteworthy details of these two designs are the unusually wide shoulders and the special treatment of the pavement edges. The scored concrete at the outer edge of both types of pavement is expected to increase the visibility of the pavement edge at night and to give drivers an audible indication that their wheels are at or near the edge of the pavement both day and night.

The 2-ft wide strip of rough surfaced penetration macadam along the edge of the concrete pavement also is expected to reduce shoulder maintenance greatly by eliminating the raveling of the shoulder that is so common at the edge of most concrete pavements.

• Provisions for growth—The standard design calls for two 12-ft lanes in each direction separated by a median zone of not less than 50 ft. However, the layout contemplates the possible addition of third lanes north of the Raritan River. Also, due to the heavy volume of resort traffic that is expected to be delivered to the parkway by the New Jersey Turnpike and by Route 25 where they intersect it north of the Raritan River, the parkway south of the junction with Route 35 near Perth Amboy to the point where it will intersect Route 33 (inland from Asbury Park) is being laid out so that a third set of parallel lanes can be added between the initial pairs of north and southbound lanes. These lanes can be used for southbound traffic at the start of holiday weekends and for northbound traffic when resort traffic is homeward bound.

• Current plans—The sections into which the parkway has been divided for traffic study and for construction purposes are shown on the map and


NEW YORK STATE THRUWAY
Sect. 1
17
Paterson
Geo. Wash. Bridge
Sect. 2
Sect. 3
Morristown
Newark
Sect. 4
Sect. 5
Easton
Phillipsburg
Elizabeth
29
24
Sect. 6
25
RARITAN R.
Flemington
New Brunswick
Perth Amboy
Atlantic Highlands
DELAWARE R.
Sect. 7
4
34
35
PENN.
33
TURNPIKE
PARKWAY
Asbury Park
Trenton
PROPOSED PENN.-N.J. TURNPIKE CONN.
PENNSYLVANIA TURNPIKE
Bordentown
Lakewood
Sect. 8
Point Pleasant
Fort Dix
Philadelphia
Camden
Sect. 9
Toms River
NEW JERSEY
STATE
40
S40
Wilmington
NEW JERSEY
Sect. 10
GARDEN
Delaware Memorial Bridge
Egg Harbor City
43
Bridgeton
50
Atlantic City
Ocean City
Sect. 11
49
Section 12
Section 13
Cape May
LEGEND
GARDEN STATE PARKWAY
Completed or under construction
Proposed construction 1st stage
Proposed construction later stages

CURRENT WORK ON THE PARKWAY is largely concentrated on providing the suburban areas of northern New Jersey with an additional highway route to ocean front areas between Atlantic Highlands and Point Pleasant.

GARDEN STATE HIGHWAY

Section No.	Miles	Status	Estimated Cost
1	20	Indefinite future	$40. million
2	7	Indefinite future	22. million
3	6	Indefinite future	30. million
4	3	Part under contract	13.8 million
5	4	Under construction	20. million
6	10	Completed	23. million
7	34	Immediate future	65. million
8	10	Indefinite future	14. million
9	4	Under construction	3.6 million
10	42	Indefinite future	50.3 million
11	28	Indefinite future	26.3 million
12	4	Completed	1.4 million
13	8	Indefinite future	5.5 million
	180 miles		$316. million
		Less cost of Sections 5, 6, 9 & 12	48. million
			$268. million

in the accompanying table. Sect. 6 and 12 have been completed, Sect. 5 and 9 are under construction, and the contracts just let are for the start of work on Sect. 4. Present plans call for early completion of that section and for a prompt start on Sect. 7, thus providing a continuous parkway from Route 24, west of Newark, to Route 34, north of Point Pleasant on the Atlantic Coast.

• **Estimates of revenue**—Due to the fact that some sections of the parkway are to be free of tolls, the earnings report on which financing of the currently proposed new construction is to be based was limited to Sect. 4 and 7, on which tolls are to be collected and on which large volumes of traffic are confidently expected.

Earnings studies of these two sections indicate a net revenue of $4,400,000 in 1955 and an average of $7,400,000 over the 30-year life of bonds proposed to be issued to finance the work now planned for early construction.

The New Jersey Highway Authority is now making arrangements to borrow $10 million on short-term notes to finance its current work. Decision as to permanent financing will not be made until after the vote on the bond referendum.

• **Engineering**—Engineering work up until the time the new highway authority was organized was done by the State Highway Department. When the authority was set up recently under the chairmanship of Ransford J. Abbott, head of the State Highway Department, Harold W. Giffin, chief of the department's division of design and construction, was named chief engineer. He is being assisted at present by a few engineers from the department's staff and by the consulting firm of Parsons, Brinckerhoff, Hall & Macdonald, New York, which firm made the traffic and earnings study for the department.

For the new work on the parkway just let, contract for completing the interchange with State Route 29 went to George M. Brewster of Bogata, N. J. for $2 million, contract for grading 1.3 miles noth of there and bridge work went to J. F. Chapman & Son, Hillside, N. J. for $1.9 million.

California completes a study of water quality criteria

A monumental research on water quality criteria has just been completed in California and will soon be ready for distribution. The research is actually a compilation of all known standards of water quality as regards most beneficial uses and most contaminants, pollutants and nuisances.

The study was made for the State of California Water Pollution Control Board by the California Institute of Technology at Pasadena under the direction of Prof. J. E. McKee. It was necessitated by provisions of the State Water Pollution Control Act that require a case-by-case study of each instance of pollution.

Abatement requirements are to be based on the economics of waste treatment as well as upon the injury to existing or future beneficial uses of state waters. This rules out rigid standards for river basins and arbitrary zoning ,of streams or underground waters. To rule effectively and equitably on pollution cases, members of the various boards need as a guide the most recent, complete and reliable compilation of "data pertaining to limiting and threshold concentration of each potential pollution substance, for each beneficial use of the water."

• **Water pollution control**—Thus, the work is intended for use by the state and its nine regional water pollution control boards as well as all others concerned with water pollution control.

• **Basis of work**—The work was based on a thorough search of all available literature pertaining to many different water quality standards. A bibliography of 1,368 references substantiates the data presented.

Aside from introductory material and general considerations, the results of the literature search are presented under four main headings. The first of these is a compilation of water quality criteria as promulgated by state and interstate control agencies in the U. S.

A second major heading is a review of judicial expressions pertaining to water standards. Here, a good indication is given of what would stand up in court. Also shown are instances of where precise facts are lacking and more research is required to provide them.

• **Various objectives**—A third major heading lists the quality objectives for major beneficial uses of water such as domestic, industrial, shellfish culture, swimming and bathing, boating and water power. This, too, is as detailed as reference material allows but indications are that researches are necessary on many of the categories. Under each such listing is included many sub-headings. For example industrial water use includes, among others, the following: laundries, ice-making, dairies, bottled beverages, photography, textiles, pulp and paper, and brewing.

The major portion of the work is a listing of all the possible potential pollutants on which data are available. This extends from abietic acid to zinc sulfate. Where substantial data are available the discussion is listed under these headings: general, cross-references, bibliography, and effects on beneficial uses.

The work in original form as submitted to the state board took up 538 pages and in addition had 58 pages of appendices and 109 pages of bibliography. Copies will be made available for general distribution by the State of California Water Pollution Control Board, Sacramento, Calif., at a later date when printing in quantity can be accomplished.

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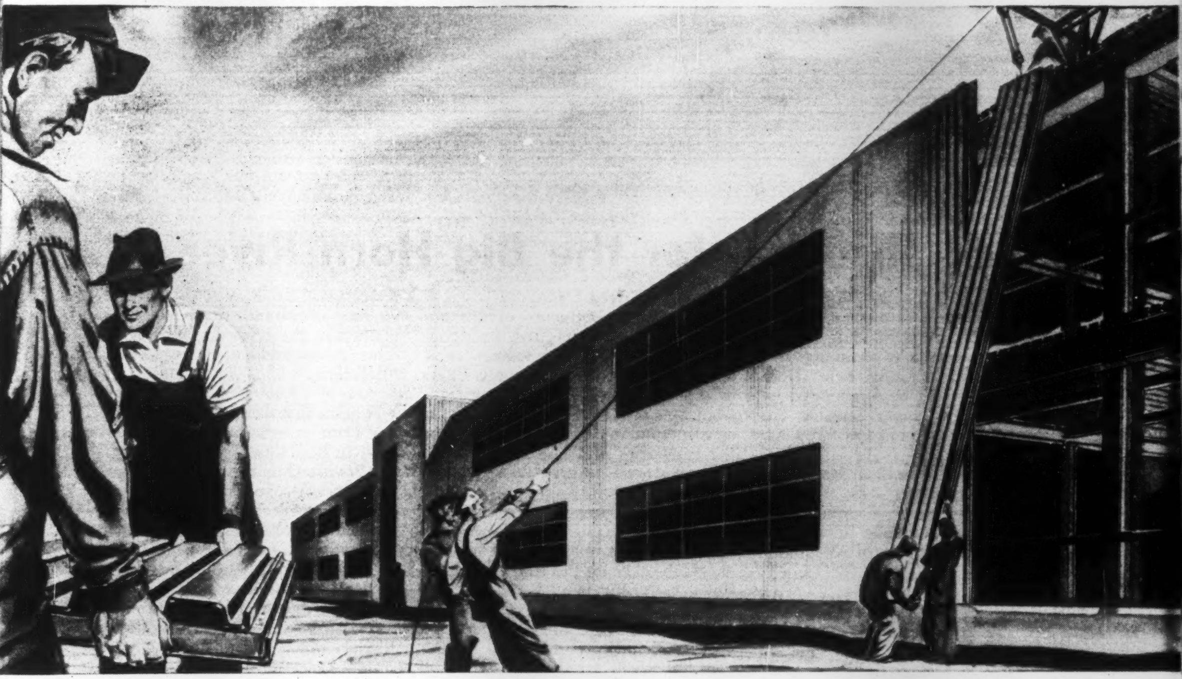

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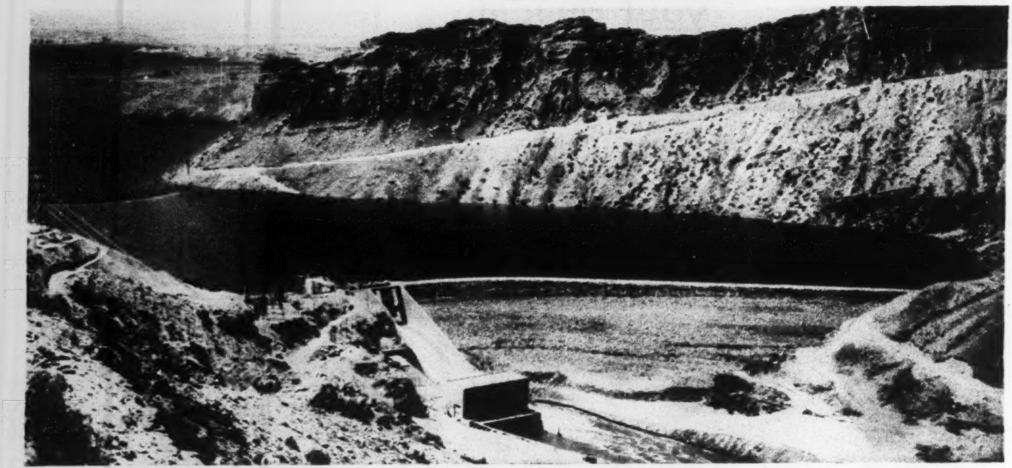


NOW IMPOUNDING 630,000 acre-ft of water, Reclamation's new Boysen Dam is already at work.

Shock absorber for the Big Horn River

NO LONGER will the Big Horn River flow uncontrolled through the Owl Creek Mountains, dissipating its energy without benefit to mankind. Instead, its erratic spring flow (from melting snow) will be impounded by Boysen Dam, to make possible the irrigation development of 100,000 acres of new land.

Dedicated last month, this new Bureau of Reclamation dam will also produce an estimated 72 million kwh of hydro power annually, to help relieve a power shortage in Wyoming.

• Dam No. 11—Boysen Dam is the eleventh to be completed in the Bureau's part of the Pick-Sloan plan for the development of the Missouri River Basin. It will be used principally for river regulation and power production until local residents organize irrigation districts and sign repayment contracts with the federal government. When its irrigation features are operative, however, Boysen will have the unusual distinction of serving land upstream as well as downstream of the site. This comes about because irrigation of upstream areas heretofore was not possible since the stream flows there could not be used and still provide for existing water rights downstream. Now, by holding excess flows in the 820,000-acre-ft reservoir for release when needed downstream to satisfy the water rights, Boysen Dam will make possible the irrigation development of new land upstream in the Wind River Basin. (The Big Horn River changes its name to Wind River just above Boysen Dam.)

There are 80,000 acres of this upstream land that can now be developed for irrigation, with assurances of a reasonably stable water supply. Flows in these upstream areas will be regulated by small reservoirs proposed for construction in the upper reaches of the tributaries of Wind River.

Downstream, about 20,000 acres will be irrigated by water pumped from the Big Horn or existing irrigation canals.

Boysen Dam not only will serve as shock absorber for the wild and erratic flows in the Big Horn River, but also will take care of the river's heavy silt load. The average annual silt load at that point in the river is eight million tons, or 5,500 acre-ft. Practically all of this sediment will be dropped in the upper end of the 18-mile long reservoir.

• Huge recreation area—In addition to irrigation and power, there is a recreation plan on which work will start soon. Reclamation officials believe that Boysen Reservoir should become one of the most popular recreation areas in central Wyoming.

There will be a large public-use area along one side of the reservoir, near State Highway 320, midway between Thermopolis and Shoshoni, Wyo. Several hundred acres will be allocated for public and private cabin sites, a boat harbor, organized group camping grounds, and fishing and hunting areas. The National Park Service estimates that 26,000 persons will visit the area yearly for various kinds of recreation. By May 1 of this year 60,000 mountain trout had been planted in the reservoir and the river downstream, and the area was opened for fishing.

• Not the first dam—The present Boysen Dam is not the first one to be built in Big Horn Canyon. The original Boysen Dam was located 1½ miles downstream from the present one, at a point where near-vertical walls of the canyon are only a few yards apart. The site was first considered by the Bureau of Reclamation in 1904, but plans were abandoned since it offered no direct irrigation possibilities.

In 1908 Asmus Boysen built a reinforced concrete dam at that site to produce electric power. Average output of the plant was 710 kw. Within a few years so much silt accumulated behind the dam that Boysen raised its height to keep his power plant operating.

In the meantime the Burlington Railroad had built a single track line up the canyon, and the higher reservoir level threatened to flood out the railroad.

After considerable litigation, Boysen was forced to demolish the top portion of his dam, which put him and his power plant out of business.

• Five-year job—The new Boysen Dam has a construction history of interest and challenge to the builders of such works. Poor foundation conditions presented the most perplexing problems.

The dam was started in 1947 and,

by next month, the dam, power plant and switchyard, together with all major relocations, will be completed. Other work such as recreational facilities and work relating to irrigation development will take another four years. Total project cost is $34 million.

A joint-venture group of seven contractors, sponsored by Morrison-Knudsen Co. Inc., held the prime contract for constructing the dam, power plant and a relocation of the Chicago, Burlington and Quincy Railroad at the damsite.

This relocation was 13½ miles long, including 7,100 ft of single-track tunnel extending beneath the reservoir. Trains passing through the tunnel at high-water stages will be 42 ft below the water level.

In addition two highways had to be relocated. State highway 320 was relocated around the reservoir area and U S Highway 20—which formerly followed up Wind River Canyon—had to be relocated on higher ground.

• **Not-so-rocky site**—Although Boysen Dam is in a site that appears to be the rockiest of the Rockies, it was necessary to provide a deep core trench beneath 400 ft of the dam.

This core trench, 50 ft wide at the bottom, with side slopes of one on 1½, extends to a maximum depth of 70 ft below the original streambed. It was backfilled with a compacted, impervious material, similar to that used in the main portion of the dam.

An additional seal was made between the rolled fill earth-and-rock embankment, and the underlying bedrock, by running a 990-ft long, 10-ft high, concrete cutoff wall along the bottom of the core trench and up the sides of the canyon.

Moreover, the bedrock beneath the core trench was sealed to a depth of 25 ft with a blanket of pressure grout, and a 110-ft deep grout curtain was provided beneath the concrete cutoff wall. A total of 20,000 cu ft of grout was used, in 14,400 ft of drilled holes.

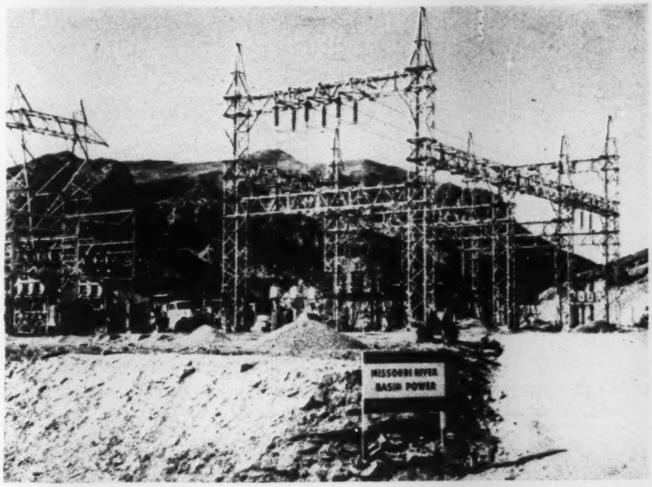
All these precautions were required to seal the damsite area, which suffered tremendous upheaval, folding and faulting about 60 million years ago during the formation of the Owl Creek Mountains.

• **Big dewatering job**—During the initial embankment construction the Big Horn River was diverted through a 28-ft ID diversion tunnel along the right bank of the river beneath the spillway area. But since the invert of this tunnel was more than 70 ft above the bottom of the impervious core trench, dewatering the area during excavation of the trench was a complicated problem.

The core trench area was dewatered by wellpointing, in five 13-ft vertical stages. A total of 210 well points was required in the first stage to control the inflow in an area roughly 320x 250 ft.

Wellpoint spacing was three ft and four ft. They were attached to 1½-in. riser pipes, 17-ft long, driven into a column of filter material inside of 8-in. sand casings. Casings were jetted and driven into place, and withdrawn prior to dewatering.

• **Excavating the core trench**—The 70-ft deep hole for the core trench was excavated by dragline and power shovel loading into 13-cu yd bottom-dump trucks. Each time excavation progressed to a deeper dewatering stage, the dragline dug a trench for



THE BOYSEN SWITCHYARD, carved out of the side of a mountain, contains a 34.5-kv structure (at left) and a 115-kv structure (at the right).

BOYSEN DAM—Facts and Figures

Dam:	
Type	Rolled earth, rock-fill
Structural height	218 ft
Crest length	1,100 ft
Top width (for highway traffic)	40 ft
Volume of material	1,700,000 cu yd
Reservoir:	
Area (normal operating pool)	31,000 acres
Capacity (acre-ft)	
Irrigation and hydro power	410,000
Flood control	150,000
Dead storage	260,000
Total operating capacity	820,000
Unregulated superstorage for flood retention	693,000
Grand total	1,513,000
Power plant:	
Rated capacity	15,000 kw
Turbines (10,500 hp each)	Two
Generators (7,500 kw each)	Two
Annual output (est. av.)	72,000,000 kwh
Outlet works:	
Spillway capacity	20,000 cfs
Outlet capacity	1,450 cfs
Outlet tunnel (dia)	5.5 ft

DEWATERING THE SITE to a depth of 70 ft below streambed called for a total of five 13-ft vertical stages of wellpointing.

EARTHFILL for Boysen Dam came from four borrow pits within two miles of site. Note contractor's camp against hills at far right.

installation of the next stage of wellpointing.

Final operation was to back the dragline up out of the hole, removing the dirt ramp that had been used by the trucks.

Building the 990 ft of concrete cutoff wall in the bottom of the hole was a problem. A crawler tractor, with bulldozer blade, and a two-unit sheepsfoot roller were lowered down the one on 1½ side slopes to the bottom of the hole, to backfill around the wall.

They were isolated in the hole for several months, until the core trench had been backfilled with impervious material. Fuel and materials for their servicing and maintenance were lowered into the hole.

• Denser than concrete–In designing this 1.7 million-cu yd rolled earth and rock fill embankment, the Bureau of Reclamation specified a high degree of compaction, ranging from 95% to 110% of the standard compaction at optimum moisture content, by the modified AASHO method. The percentage of rock in the fill varies from four to 60%, depending on the available material. Test samples taken from the embankment during construction showed that it was being compacted to such a degree that it weighed 145 lb per cu ft, which exceeds the density of some types of standard portland cement concrete. In this particular area about 50% of the material was sand and gravel.

Earthfill material, essentially a well-graded natural clay, silt and sand, was obtained from four large borrow pits within a two-mi radius of the damsite. All stones larger than five in. were removed by rock rake and hand picking, after the material was dumped in place and prior to compaction. Ordinarily it took 12 passes of a sheepsfoot roller to achieve the required compaction.

Some watering was needed on the fill, but most of the required moisture was added in the borrow pits. This was done by diking off and flooding areas of the borrow pits and permitting them to soak for about two weeks to get a uniform moisture content.

Piezometer tips were installed in the embankment at various depths to check settlement and pore pressures after the dam is completed.

Boysen Dam was designed in the Bureau of Reclamation's Denver office, and built under the supervision of Kenneth F. Vernon, director of Region VI, with headquarters at Billings, Mont. Project engineers were: Russell S. Lleuvance, G. Raymond Rolin, and Theodore E. Mann. Other field personnel included: B. G. Felkner, field engineer; Burge Kepford, office engineer; C. E. McHuron, geologist and T. E. Mann, chief inspector.

Supervisory personnel for the prime contractors included: B. Williams, project manager; H. E. Buckert, general superintendent; J. R. Barry, project engineer; and R. I. Gutru, office manager.

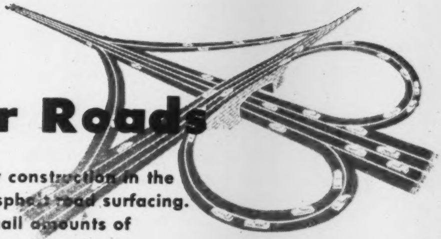
California to proceed with underground dam

The State of California will go ahead with its experiment at Manhattan Beach, a suburb of Los Angeles, to determine whether an underground dam of fresh water can stop sea water from entering the ground water basin back of the coast, from which Los Angeles draws a large part of its water supply (ENR Apr. 24, p. 78).

The plan is to create a "coastal pressure mound barrier" by injection of fresh water through wells drilled close to the water front. The project has been held up since last spring when the State Water Resources Board called a halt to actual injection of water until waivers had been obtained from the water service organizations in the area, relieving the state from responsibility for any damages which may result.

The liability obstacle was cleared when the California Water Service Co., a holdout because it felt it could not execute any agreement that might interfere with its public service obligations, capitulated. The water company signed an agreement providing that five test wells will be used and that the chloride content will be checked once a week. If over a period of two weeks the chloride exceeds 50% of that at the start, the company will have the right to demand that the experiment stop. As water for the test has to be piped two miles, actual injection will not start until November or December.

facts about Rubber Roads



The most promising new development in highway construction in the past few years has been the use of natural rubber powder in asphalt road surfacing. All evidence to date indicates that the addition of relatively small amounts of natural rubber powder to the top surface of an asphalt highway will make the road last longer with less repair, thus stretching the highway dollar. Such rubber-asphalt roads have now been in use abroad for 15 years, and show that elasticity has been added to the pavement, susceptibility to temperature variation has been reduced, the pavement is less brittle at low temperatures, and the effect of shock and vibration on the pavement has been reduced. All this adds up to less maintenance costs.

During the past 15 years, test roads of natural rubber powder in asphalt have been laid in the Netherlands, France, Denmark, Sweden, Switzerland, England, Belgium, Malaya, Ceylon, Indonesia, Africa and Australia, as well as in Canada and in 17 states and the District of Columbia in the United States. The Dutch road, the oldest, has stood up under 15 years of heavy traffic with no maintenance. Massachusetts has already laid more than 300 miles of rubber-asphalt pavements of all types. The City of Baltimore, after a two-year test, has recently ordered the first routine application of rubber-asphalt paving on a city street.

RUBBER ROAD RESEARCH LAB

Highway engineers in the U. S. and Canada have been aided in making tests of rubber-asphalt pavements by the new and completely equipped research laboratory of the Natural Rubber Bureau in Rosslyn, Virginia. Under the direction of Harry K. Fisher, this laboratory is carrying on extensive research in the use of rubber in asphaltic and tar materials. Its findings are available to all highway engineers, and its staff is available for consultation at all times on rubber road problems. It uses standard tests as approved by the American Society of Testing Materials and the American Association of State Highway Officials. Visitors are welcome to inspect the laboratory and its facilities.

FREE BOOKLET

Stretching
RUBBER ROADS

Those interested in learning more about rubber roads should write to the Natural Rubber Bureau for a copy of the 52-page booklet — "Stretching Highway Dollars With Rubber Roads". This booklet describes in detail the various test roads laid through 1951 in the U. S. and Canada, and gives general background and technical information about rubber in asphalt pavement. A copy of the booklet will be sent free on request.

NEW FILM

The visual story of rubber roads has been ably filmed by United World for the Natural Rubber Bureau in a 30-minute, 16 mm. sound film just released. This film records the results of various test rubber roads to date, shows the work going on at the Natural Rubber Bureau's Research Laboratory, and gives a complete summary of rubber road developments. It can be obtained at no cost for showing to groups of highway engineers and others interested in stretching highway dollars.

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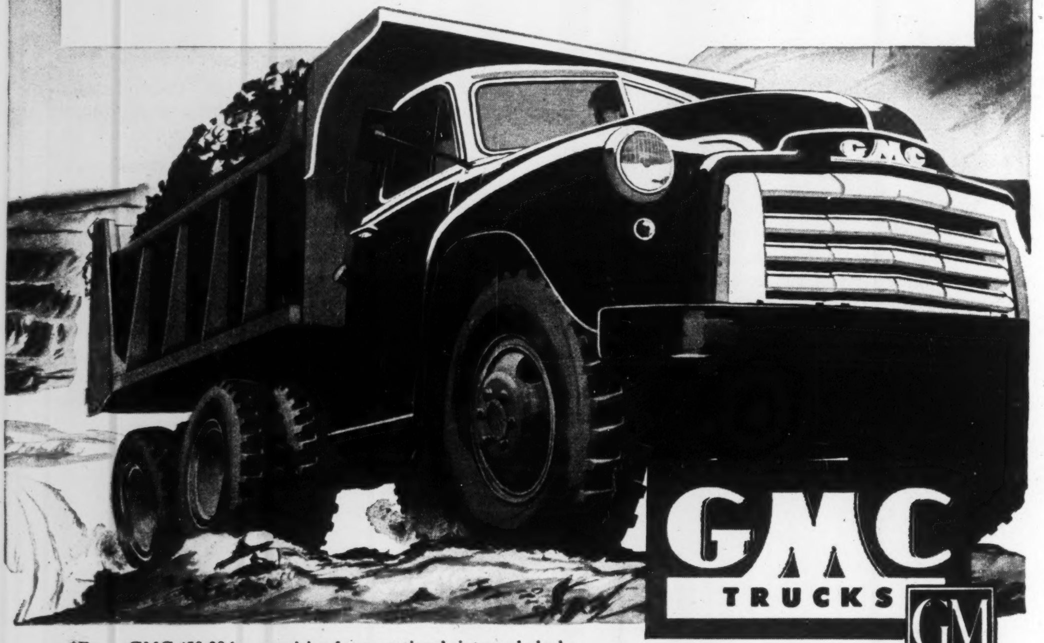

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Move to trim 'gold plate' from NYC schools

THE NEW HEADS of the New York City Board of Education's Bureau of Design & Construction have issued a series of design recommendations with a twofold purpose: To eliminate wasteful and expensive overdesign; and to give the bureau's staff the advantage of some fresh thinking.

When they took over a little more than a year ago, the new bosses found the design office in a state of inertia. For example, "standard detail" drawings had mushroomed over the years until there existed 1,000 of them—now reduced to 400 with more being eliminated or combined every day.

• **Solicited advice**—One of the first moves was to ask some 60 private engineers, architects and contractors, who had had dealings with the bureau, for their views on possible design improvements. From their responses were culled the official recommendations, the most important of which are given in boldface type in the accompanying chart. The comments were brought out at a meeting of the above-mentioned groups.

Before issuing the design suggestions to the staff, a thorough check was made to indicate the magnitude of savings possible. The first opportunity arose when the aggregate of low bids for an elementary school in Richmond, designed by the old standards, appeared as $968,095. John P. Riley, new head of the bureau with the title of Co-ordinator of School Construction, recommended rejection because he believed a saving of $100,000 could be achieved by redesign based on more realistic standards.

• **Doubled expectations**—Six months later, in May of this year, the new low bids totalled a gratifying $753,917—a saving of over $200,000. Riley cautions that this was a hand-picked case in which the savings were far greater than can be normally expected. But he emphasizes that the redesigned school is in nowise inferior to the original from functional and construction standpoints.

The specific design recommendations are, of course, only one phase of the bureau's revitalization effort. Reorganization of lines of authority, improvement of contract procedures, and other design changes have already been accomplished (see ENR June 26 p 62).

Completing the new team are William Correale, Chief Engineer, and Michael Radoslovich, Chief Architect.

SUGGESTED DESIGN CHANGES

GENERAL STRUCTURE

Simplify parapets—They have been too high.

Economize on wall finishes—Glazed tile and acoustic tile and plaster can be eliminated to some extent.

Standardize stairways in steel—A standard steel stairway can be used in both concrete- and steel-framed buildings.

Consider cavity wall construction—It is now being used in one school. It may bring heating plant savings also.

Consider open web steel joist framing—Solid sections have been used exclusively. Present steel shortage will delay trial.

Study concrete column spacing—Elongated rectangular shapes that don't protrude from walls are suggested to aid in achieving modular spacing. They are also convenient for sub-dividing long-span window openings.

Eliminate or reduce crawl spaces—They have been exceedingly large.

Eliminate excessive floor topping—Instead of 2 or 3 in. of light mortar topping, ¾ in. will suffice. And rather than place conduit within the 3-in. topping, it can be cast integrally with the floor slab.

Reduce story heights—By careful design, particularly of ductwork, floor-to-floor heights can be reduced 6 to 12 in., down to 11 ft 7 in.

Substitute for slate blackboards—Enameled steel, plywood or glass are alternatives that may prove more economical.

Use more movable partitions for offices—Modern office buildings make extensive use of them, why not schools?

Omit hung ceilings in gymnasiums—About the only purpose they serve in such areas is to hide ductwork. It would be much cheaper to relocate the latter.

Omit steel plate flashing at roof beams—It simply isn't needed.

Use common brick where feasible and appropriate.

HEATING AND VENTILATING

Employ common breeching and chimney—It has been adopted by everyone else.

Use steam for pre-heating oil—Prevalent hot-water method is more expensive.

Use standard fans—Specs have required special designs, but standard manufacturers' units would suffice.

Substitute weatherproof fans for roof fan rooms.

Simplify hanger details—Present specs correspond to using a belt, suspenders plus an extra pair of the latter to hold up one's trousers.

Revise low water cut-out—A low water cut-out with manual reset is suggested instead of low water feed and automatic cut-out.

Permit ball bearings in ventilation fans—A special type of bearing has been required, but standard ball bearings will do the job as well.

Employ unit heater in gymnasiums—This is one way of eliminating ductwork, thence hung ceilings.

Eliminate oil tank saddles—Since tanks have been backfilled and strapped down, saddles are quite unnecessary.

Consider surface-mounted convectors—Not every one has to be recessed.

PLUMBING

Reduce pipe covering—Too much has been used.

Revise hot water heaters to use in-the-line circulators—Where size of school permits, this is better than separate heaters.

Reduce pipe sizes when flushometers are used—Everyone else uses pipe about two sizes smaller.

Simplify roof drains to eliminate pitch pockets—Latter aren't necessary.

Eliminate hooded exhaust vents over urinals—They aren't really required.

ELECTRICAL

Eliminate standard drawings when part has a catalog number—The drawings are completely superfluous and only confuse the issue.

Substitute circuit breakers for fuses—Even though first cost is higher, lower maintenance charges make circuit breakers more economical.

Study new lighting standards—Board of Regents has issued new regulations which pave way for use of fluorescent lights.

Substitute R for RH wire—Former is quite adequate and more is available.

TEMPORARY PIER on St. Lawrence River at Seven Islands, Que. has handled almost all equipment and materials for development of great Ungava iron ore deposit. (John Rodriguez photo)

Construction supply . . .

Big problem on Labrador railroad

Robert H. Dodds
Associate Editor

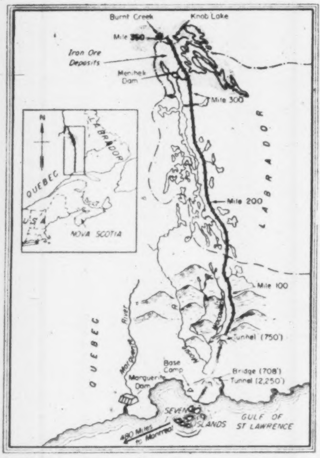
EVERY TOOL in the transport man's kit is being used to bring men, machines and materials to their worksites along the Quebec, North Shore and Labrador Railway. (ENR Sept. 11, 1952, p. 38).

Ships, trucks, the new railroad itself, and airplanes are doing everything they can to perform a supply job that will enable the contractor to meet his schedule. Begun in the fall of 1950, the 360-mile line is expected to be finished by the end of 1953. In 1954 it will bring iron ore out of a great new range astride the boundary that divides Labrador from the Ungava region of Quebec. Lower terminus of the route is Seven Islands, Que., a Gulf of St. Lawrence port that has no land access to the outside world.

This lack of land access to the lower terminus is but a minor construction disadvantage, compared to access handicaps up the line. There, neither road nor usable waterway existed in 1950. Furthermore topography and climate combined to discourage rapid or successful establishment of access roads. Air transport would have to get the job going. Water transport would complete the connection with the outside world.

One of the first tasks was to erect a temporary wharf at Seven Islands. Built in the fall of 1950 with the expectation it would be destroyed by 1951 spring ice on the St. Lawrence, the pier survived until a floe took it out last spring. It was replaced.

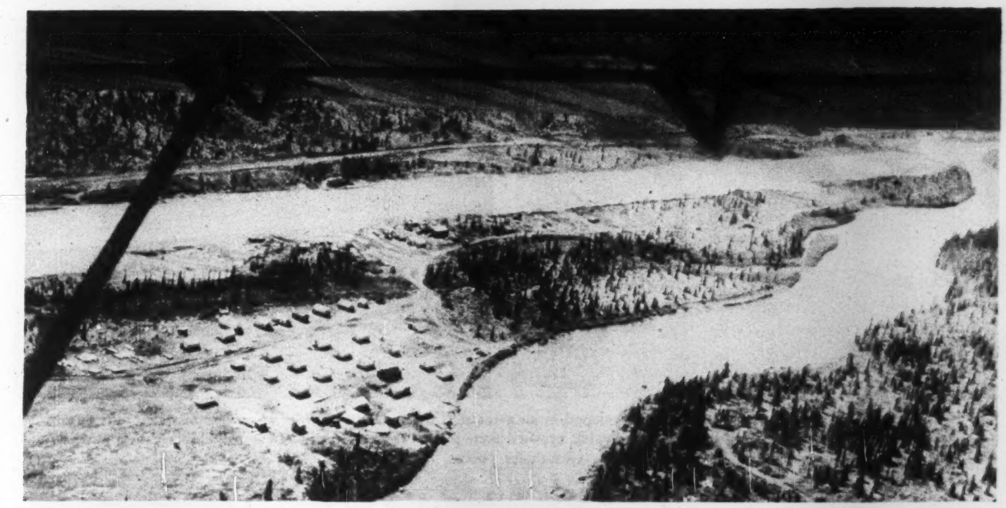
The ore company has two ships on charter. These and other ships brought 89,000 tons of equipment, rolling stock, material and supplies for subsistence to Seven Islands in 1951. This year they will bring 200,000 tons, a substantial part of which includes rolling stock and track materials.



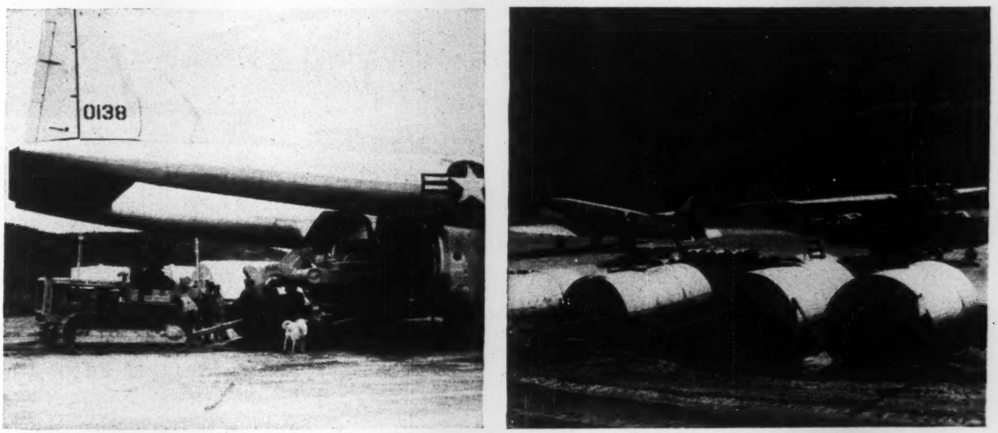
ROUTE where railroad construction must be supplied pierces complete wilderness for 360 miles.

• **Airlift still is important**—Most of the tonnage, then, proceeds by rail as track is laid—now about 65 miles. But one substantial item—cement for Menihek Dam power house, 330 miles from Seven Islands—is being airhauled this summer. Probably the most spectacular single airlift event on the line since the original rush of construction equipment (ENR July 19, 1951, p 36), the "cement run" will account for 3,000 tons (60,000 bags) of this season's estimated 22,000 tons of air cargo. Last year the total was a bit more than 16,000 tons, amounting to 2.4 million ton-miles. Estimated 1952 ton-mileage is 6.3 million, according to Charles Hoyt, superintendent of operations for the airlift.

Airlifting operations are conducted by Hollinger-Ungava Transport Ltd. which, like the QNS&LRy., is a subsidiary of Iron Ore Co. of Canada. The airline has five DC-3 airplanes, a Canso (amphibian similar to the U. S. Navy's Catalina) for cargo, as well as six smaller float planes and a



AIRSTRIP is feature of every main construction camp. It has been possible at each site to find a location for a 5,000-ft strip: good drainage, minimum excavation and suitable gravel for surfacing. Most airplanes have directional landing gear. (ENR photo)

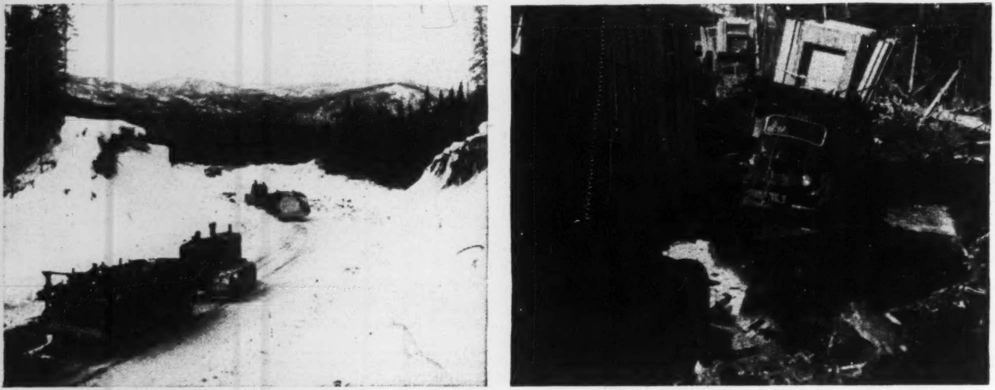


AIRPLANES of several types have served the railroad construction. At left is a Fairchild Packet, which was loaned by U. S. Air Force for a short time in 1951. It handled whole machines. At right, one of five Hollinger-Ungava Transport Ltd DC-3's and an amphibious Canso deliver fuel to storage tanks at Mile 55 airstrip. (Rodriguez photos)

helicopter. On rental, HUT has a converted Lancaster bomber and a C-46 Curtiss Commando. These two planes, together with one DC-3, carry the cement, their loads varying from 75 sacks in the DC-3 to 180 sacks in the Lancaster. Cement-hauling continues around the clock. This is possible because the air strips at Menihek and Seven Islands are lighted. The upper-terminus airstrip, at Knob Lake, also is lighted. Nine more strips, at the contractor's main grading camps, are unlighted. Operations there are confined to daytime. Standard strip length is 5,000 ft.

• **Airstrip construction** – Getting the airstrips ready for construction service has been a task fully as intriguing as the actual railroad work. In general, lightweight grading equipment, some of it in pieces, was flown in by bush pilots in small planes on floats or skis. Where there were large lakes, DC-3's on skis brought grading equipment in the winter; the Canso, which can carry a small bulldozer complete, lands on these lakes in the summer. Sites were chosen for their ease of airstrip construction: little excavation required, good native material. In some cases of sandy soil, clay was added for binder.

Once the airstrip was ready, land planes could bring in full loads of men, equipment, fuel and camp materials. It was this phase of the work that enabled the contractor to attack his grading assignment from several points at once. Tractors, scrapers, trucks and shovels were disassembled into plane-load units (8,000 lbs or less in the case of DC-3's), taken to the isolated campsites and reassembled. Units that were too heavy or bulky were cut up with a torch, then welded together again at the reassembly point. Tractors of the largest size went in this way. Cost of this air transport ranges



LAND TRANSPORTATION routes have been developed in an attempt to supplant airlifting wherever possible, but success has been limited. At left, a convoy moves northward with crusher-plant parts. At right, a load of camp building panels pushes slowly along the tote road that served some railroad work. (Rodriguez photos)

TRACKLAYING MATERIALS make up heaviest tonnage for work supply. Because all tracklaying is being done from job's lower end, rails, ties and spikes go in by rail. (ENR photo)

FLOAT PLANE is the versatile transport medium that ties together loose ends of the job, carrying men, mail and small parts to isolated places along the lake-speckled location. (ENR photo)

between 5 and 7 cents a pound, depending on the distance hauled.

For a brief time a Fairchild Packet, on loan from the U. S. Air Force, carried whole tractors, scrapers and other items. This airplane accounted for 1,000 tons of HUT's 1951 total tonnage of 16,000.

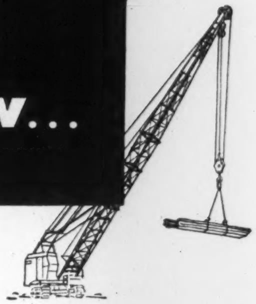
One airstrip—at Knob Lake—was built more than two years before railroad construction began. It served ore body exploration work. (Railroad location parties were served by bush pilots, who land their planes on the hundreds of lakes along the line). Then in the fall of 1950 an airstrip was built at Mile 100, to get ready for the 1951 construction season. Since then strips have been built at Miles 22, 28, 36, 55, 80, 134, 163, and 290 and 330 (Menihek) in sequence determined by the railroad grading construction schedule needs.

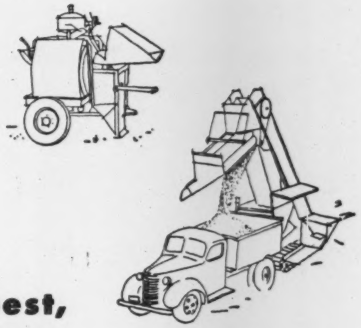
An idea of the airlift's importance can be gained from the fact that until the end of 1951 most cargo taken above Mile 12 was airborne.

• **Land haulage**—A major project of the 1951-52 winter was to build a tote road all the way to Knob Lake, in the hope of reducing dependence on the expensive airlift. The location included a temporary bridge across the Moisie River at Mile 17, completed sections of railroad grade and connecting pieces of roughly-built tote road. Above Mile 180 much of the route was on lake ice, which proved treacherous even in cold weather, reducing the land route's effectiveness in its upper reaches. (If the idea had worked, Menihek Dam cement would not have had to be flown in this summer.) Some land haulage to the main camp at Mile 59, however, has continued into this summer, despite loss of the Mile 17 bridge in the spring break-up. By that time the railroad's Moisie River Bridge was complete.

Along the coast, land haulage has not been a problem. Outside of the Seven Islands base camp and terminal yard areas there is only one major construction element: Marguerite Dam, which will supply electric power for ore-handling machinery and other purposes at Seven Islands. Improvement of an existing local road 20 miles westward to the damsite (roughly parallel to the St. Lawrence, in coastal plain and foothills) was all that was necessary to accommodate this haulage. Of course heavy items must ford streams to by-pass light bridges.

do you know...





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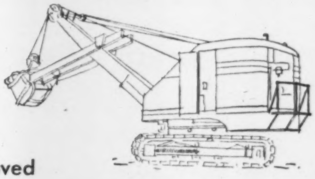

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JOHN T. DUNLOP, impartial chairman of the National Joint Board for the Settlement of Jurisdictional Disputes, ponders a problem. (ENR photos by Compton)

Union troubles are Dunlop's Business

Joseph Gambatese
Washington Staff

In recent years there has been one thing common about any big labor situation involving the construction industry and the AFL building trades unions:

You could always find John T. Dunlop up to his neck trying to make it come out right.

With White House credentials, Dunlop back in 1948 helped general and specialty contractors and the AFL Building Trades Department set up the National Joint Board for Settlement of Jurisdictional Disputes in the industry. Dunlop became impartial chairman and has since helped settle close to 2,000 jurisdictional disputes.

When President Truman established an Atomic Labor Relations Panel to help settle disputes affecting atomic energy three years ago, he made Dunlop one of its members. Last week at Paducah, Ky., Dunlop got signatures of 25 building trades union officials on an agreement which promises to end the rash of wildcat strikes affecting atomic energy construction.

When wage controls were imposed in January, 1951, Dunlop sat as a public member of the Wage Stabilization Board. He was instrumental in getting WSB to set up a special panel—Construction Industry Stabilization Commission—to handle wage stabilization for on-site mechanics in the industry. He also played a leading role in the drafting of special wage policies necessary because of the peculiar nature of construction work. Dunlop was no neophyte. He had run the old Wage Adjustment Board, which performed the same service for the National War Labor Board during the war. Dunlop is an authority on the subject of wage determination. He has published a textbook on the subject and is working on another on the "theory" of wages.

• **Worker and teacher**—Dunlop is young. 38 years old. He will loom large in the construction labor picture for many years to come.

The construction industry, of course, knows John Dunlop best as the soother of its jurisdictional headaches. The job gives Dunlop headaches, too. But he thrives on hard work and knotty problems—handling many jobs, often criss-crossing the country, and still finds time to write extensively and raise a family.

Besides his work on WSB, the atomic panel and the joint board, Dunlop has been teaching at Harvard. He won't teach this next school year, however. He will use that time to write two books (on a Guggenheim award.) They will be on the "theory" of wages and on the government's relationship to collective bargaining. His experience as a White House troubleshooter will provide most of the source for the second one.

• **Joint board workings**—The joint board has held about 160 meetings in its headquarters in the AFL building in Washington since the disputes-settling plan took effect on May 1, 1948. Ten to 20 decisions are made at each meeting. The joint board consists of Dunlop, chairman; and four contractor and four AFL building trades representatives. Yet, in all these decisions, Dunlop has had to cast a vote only four times to break a tie. Almost all decisions are made by a vote of the contractor and union members. Most of the decisions are "job" decisions applicable only to the particular job affected.

A typical meeting will include disputes like these:

- Hod carriers are refusing to work in a dispute with the plumbers over laying of piping from main sewer in street to a recreation hall under construction at Penn State College. Joint board directs hod carrier President Joseph Moreschi to instruct local to furnish men for this work and to bring before the joint board any complaint over work assignment.
- A telegram has been received from F. H. McGraw & Co. concerning dispute between operating engineers and carpenters over repair and maintenance of pumps at the Paducah atomic energy project. The joint board sends copies of the telegram to the international presidents of the unions with a request that they adjust the dispute and advise the joint board of what action is taken.
- Carpenters are refusing to work on an electrical construction job at Providence, R. I., in a dispute with the iron workers over butt welding of horizontal joints between three sections of vertical casing. The joint board instructs the contractor to assign the disputed work in accordance with a decision rendered on Oct. 25, 1937, by John A. Lapp, then national referee for the building trades unions. (That decision states that the operation of electrical welding aparatus belongs to the trade doing the welding.) The carpenters are instructed to return to work immediately.

Those are samples. On the day these cases came up there were six others just like them.

It is usually refusal on the part of a union to permit its members to work which results in a jurisdictional stoppage. In the first three months of this year, there were 140 such stoppages of construction. More than half of them were caused by three of the 19 building trades unions – carpenters, plumbers and iron workers.

Occasionally, a contractor will stop a job because of a jurisdictional dispute. This happened seven times in the same three-month period.

• **Achievements**–Dunlop, reviewing the joint board's four-year history, notes at least four achievements:

1. Jurisdictional disputes have been handled without "appreciable resort" to the Taft-Hartley labor law.

This means that men have returned to work quicker, reducing the loss in construction hours. Expensive legal proceedings have been avoided. Except for four cases in which Dunlop cast a deciding vote, decisions have been made by practical and experienced contractor and union representatives.

The National Labor Relations Board has issued only three decisions in jurisdictional disputes within the province of the joint board. Two were significant. In the Manhattan Construction Co. case, (ENR Aug. 14, p. 27) NLRB recognized the joint board as a proper agency to decide jurisdictional disputes involving contractors and unions who have subscribed to the plan.

NLRB's general counsel has cooperated to the extent of giving the joint board a chance to settle jurisdictional disputes that contractors bring to NLRB for relief.

2. The joint board's procedural rules stating the obligations of contractors and unions will stand as a major contribution to the orderly settlement of jurisdictional disputes. They specify the basis on which contractors should assign work and the steps unions should follow in making complaints.

3. Time and effort contributed by union and contractor members of the joint board, without pay, reflect a determination to settle these disputes within the industry.

The joint board has handled almost 1,500 work stoppages and several times that number of disputes without stoppages. There have been 160 meetings at which from 10 to 20 job decisions have been made. The number of disputes really is small, considering that tens of thousands of con-

ECONOMICAL

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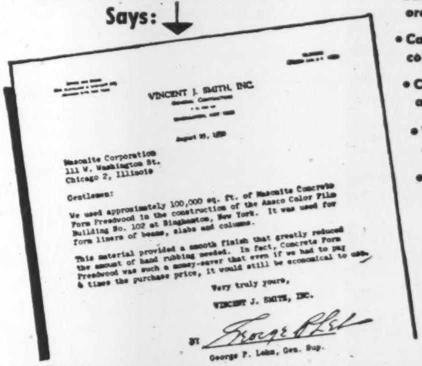

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(SIKA No. 2, SIKA No. 4A) Leaks are easily sealed on the exposed side with quick-setting SIKA mortar. It is not necessary to relieve pressure. SIKA No. 2 is used against heavy pressure or bleeders, SIKA No. 4A against seepage or moderate pressure.

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(IGAS JOINT SEALER, SIKA CAULKING) IGAS JOINT SEALER seals even against pressure and continual movement. Will not sag, crack, dry out, become brittle or lose adhesion. In work above grade, SIKA CAULKING is used where highest resistance to atmospheric change is desired.

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WEIGHING the arguments pro and con.

struction projects are in operation at one time.

4. A number of national agreements have been made settling long-standing disputes, while some trades have developed a working relationship under which they will settle their differences on individual jobs without going to the joint board for a job decision.

Some of them:

Carpenters-Laborers: For years these unions fought over the stripping of forms from concrete. On Oct. 3, 1949, the two unions made an agreement and have since implemented it with a working relationship. Result: No disputes between these two unions have to go to the joint board.

Iron workers-Electricians: They feuded long over work on transmission towers. The unions' presidents have reached some kind of understanding under which they adjust their differences directly.

Sheet metal-Iron workers: At the beginning of the joint board, half the cases involved these two trades. Relations improved gradually. For three years the unions talked over a possible agreement of jurisdictional differences. It materialized, finally, early this year, on Feb. 6. The joint board hasn't received any dispute between these two unions for more than a year.

Other unions have committees working on disputes or have been settling cases directly. They include: boilermakers and iron workers, plumbers and sheet metal workers, carpenters and iron workers, carpenters and bricklayers, plumbers and boilermakers, and electricians and iron workers.

The direct settlement of disputes by formal agreement or interim understanding has been "encouraged and extended." (With 19 building trades unions, there are 171 possible combinations of two unions, making 171 different disputes possible).

- **Union problems**—Dunlop sees problems that contractors and the AFL have to face to improve the functioning of the joint board plan.

The AFL already has taken steps to correct one:

Too many picket lines: The AFL building trades on July 15 adopted a policy of drastic action against any union or local council which engaged in, or supported, picketing in a jurisdictional dispute. (ENR, July 24, page 21) This is working out very well, Dunlop says all concerned agree. In more than a month, only three picket lines popped up over jurisdictional issues, and they were removed quickly.

Trouble spots: They must be cleaned up. Disorder, sit-downs and forcible interference with work assignments have occurred, usually on remote jobs in recently-organized areas where there have been few big jobs. In many cases, job stewards have assumed the functions of business agents and international representatives. undermining the authority of local and international unions.

Law suits: Local unions must stop suing contractors or other unions in state courts for alleged loss of job opportunities.

Union participation: Uncertainty over the participation of some building trades unions in the joint board plan must be cleared up. All 19 unions in the AFL Building and Construction Trades Department must participate if the plan is to be effective. It is up to the building trades to "put their own house in order."

(Present uncertainty, on the labor side, concerns the electricians and lathers. IBEW pulled out of the plan in February, feeling that the joint board's decisions favored unions hired by general contractors. The lathers wrote a letter of withdrawal some months later. Actually, the agreement setting up the plan binds all of the AFL's building trades unions. So it is questionable whether these unions can pull out without also quitting the building trades group, which they do not plan to do. Dunlop looks for this uncertainty to clear up. IBEW's president, Dan W. Tracy, is on an AFL committee appointed last month to straighten out this situation.)

• **Contractor-problems**—Problems Dunlop sees for the contractors:

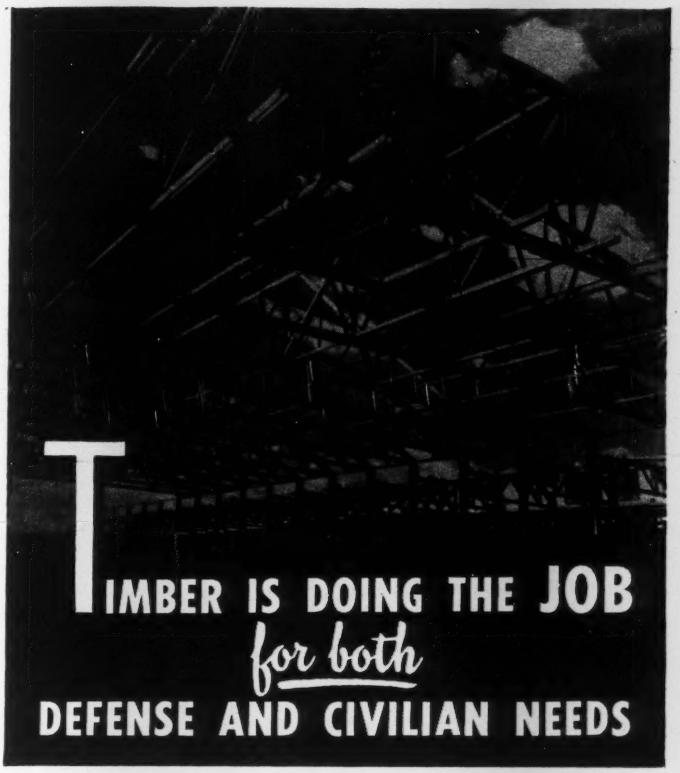
Work assignments: Contractors must learn to give more time and more thought to making working assignments.

Job practices: Contractors should be concerned about job practices which build up the position of the steward as against the business agent and international representative on jurisdictional questions and thereby stimulate direct job action.

Coverage: Greater effort should be made to bring all contractors under the plan. Contractor associations should clarify their authority to bind individual contractors. The Associated General Contractors and eight specialty contractors subscribed to the plan. However, the electrical contractors and master plumbers withdrew last winter and there is some question whether the heating contractors got out, too.

• **Near collapse**—Twice it looked like the joint board might collapse. In May, 1949, the AFL Building Trades Executive Council actually voted to terminate the one-year-old agreement. The building trades were going to set up their own jurisdictional disputes-settlement machinery without contractor participation. (ENR, May 26, 1949, page 33). They had that kind of a setup before with John A. Lapp, then Peter Eller, then William L. (Big Bill) Hutcheson, president of the carpenters, serving as referee. Besides, it looked in early 1949—after President Truman's dramatic 1948 victory—that Congress would repeal the Taft-Hartley Law.

(*Continued on page 46*)



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ENR

DECIDING a case adds it to 2,000 others.

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But in the fall of that year, after Congress failed to do anything about the labor law, the joint board pact was revived after being inoperative for five months. (ENR, Oct. 20, 1949, p. 23). The revived plan's procedures were strengthened and simplified to encourage agreement between warring unions. The change was welcomed by both the contractors and the unions. It was agreed that this put the board on firmer ground.

The second threat to the joint board's existence—withdrawal by some of the unions and contractor associations last winter—is in the process of being removed.

One big reason for this view: It is fairly clear that U. S. labor law, even when changed, will always curb jurisdictional strikes. And the unions and contractors prefer to decide jurisdictional questions "within the family." Besides, the joint board plan has been a big factor in the increasing number of jurisdictional disputes which are being settled by agreement of the unions involved.

• How it works—The joint board does not decide disputes in a vacuum. It operates under a body of law built up since the early 1900s. This "law" is made up of (1) Decisions of the AFL executive council, one as early as 1904; (2) Decisions of AFL conventions; (3) Many national agreements between unions; (4) Memoranda of agreement; (5) Decisions of the "National Board for Jurisdictional Awards in the Building Industry," which the AFL building trades themselves operated in the 1920s; (6) Decisions of referees Lapp, Eller and Hutcheson and (7) National decisions of the current joint board.

The joint board has published these decisions and agreements, together with current rules of procedure, in a "green book." Every contractor dealing with AFL unions should have one.

On wage stabilization, Dunlop feels CISC is doing a better job than was done by its World War II predecessor, the Wage Adjustment Board. The effect of stabilization has been to keep a better balance of wage increases in the construction industry. Present policies permit wage increases of 10% above Korea level, plus 15 cents an hour for 1952 and 7½ cents in welfare benefits. While these figures may have served as "targets" for increases larger than some unions might otherwise have got, the CISC wage policy also has kept some unions from getting still larger increases, in Dunlop's opinion. In other words, there is a better balance as a result of stabilization.

What will happen next spring, when controls are due to expire, is difficult to say. Dunlop thinks it depends on what develops by then—elections, international situation, defense production, inflation.

Whatever it is, you can look for John Dunlop to be a key figure in it. He has not pulled out of the government picture completely. Dunlop still carries White House credentials as consultant to John R. Steelman, assistant to President Truman and Acting Mobilization Director.

May allow 15-cent rise without application

There is a chance that the Construction Industry Stabilization Commission will change its procedures to permit contractors to pay increases of 15 cents an hour for 1952 without the need of filing applications and waiting for approval.

CISC now gives almost automatic approval to 15-cent increases, on top of the 10% increases for 1951, except where the increases would be "seriously unstabilizing."

Pressure to make the change is coming from AFL building trades unions. They complain that many workers are losing money because of the delay in getting CISC approval of an increase. That happens in cases where the contractor makes the increase effective the first pay period after CISC approves it. On a 40-hour week, a worker would lose $6 a week waiting. However, stronger unions able to force a contractor to make the increase retroactive are not bothered by this problem.

An argument in favor of the change in rules is the fact that CISC's parent body, the Wage Stabilization Board, permits employers in other industries to pay cost-of-living raises automatically without waiting for a government O.K.

An alternative to automatic approval would be to require contractors to file notice of proposed 15-cent increases with CISC, but permit them to pay the increase after 30 days if CISC doesn't find it unstabilizing within that period.

Even without union pressure, CISC might make the change to save money to meet the cut in appropriations by Congress. The WSB itself is moving in the direction of more-self-administerable type of regulations to be used both for wage increases and for fringe benefits.

Carpenters' union fined for closed shop violation

AFL Carpenters Local 581 has agreed to pay three men $100 each in settlement of claims for pay for work lost when the local prevented them from working for a contractor at Herrin, Ill., because they were not members of the union.

The local violated the closed shop ban in the Taft-Hartley law. The settlement was approved by the National Labor Relations Board and, being filed with the U. S. Court of Appeals, has the effect of a government order.

Union initiation fees range from $47 to $250

How much does it cost to be a union construction worker at the General Electric plant near Louisville, Ky.?

New workers looking for work on the $100 million project sometimes find that it's rather costly to get into any of the 14 major AFL unions employed there, according to reports from Louisville newspapers.

Initiation fees charged by these local unions range from $47 to $250 and dues run from $2 to $9 more each month. Some unions have said that their dues and fees go partly into welfare benefits and insurance.

Unfortunately the crafts that have the most expensive initiation and dues fees don't always offer the highest wages. Most of the 2,000 construction men on the GE job pay these fees.

In some crafts there are definite shortages of skilled workers and some observers attribute such shortages partly to the high costs of union membership.

For example, there is a shortage of sheet metal workers at the project. The shortage may or may not be due to the fact that Sheet Metal Workers Local 110 has the highest initiation fee of any of the crafts—$250. The fee is based on 100 hours pay at a base wage of $2.50 an hour. Dues in this local are $60 a year.

For other locals, the schedules are:

Plasterers—$200 initiation, $45 yearly dues.

Cement masons—$180 initiation, $42 yearly dues.

Operating engineers—initiation fees of $163.50, $113.50, and $41.50, depending on the skill classification. Dues are $52 a year.

Electricians—initiation fee, $125. Dues $4.10 a month, plus a 1% assessment on earnings. Based on a $2.70 hourly wage this assessment amounts to about $5 a month.

Plumbers—initiation fee, $108.25. Dues, $2.50 a month plus an assessment of 25 cents for each day worked.

Iron workers — initiation fee, $108.25. Dues, $5.25 a month, plus a $2.25 assessment.

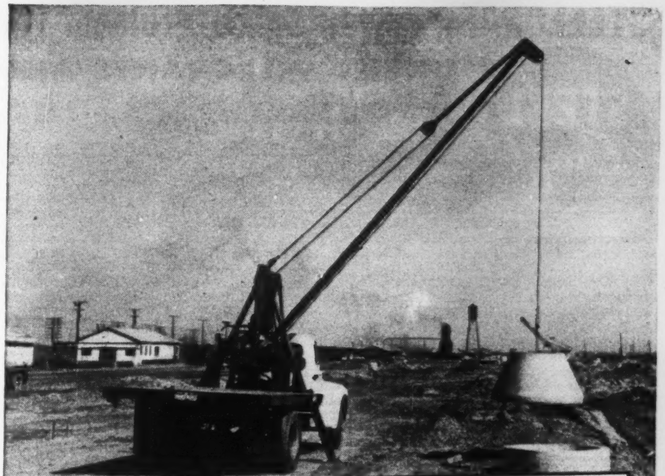
Bricklayers—initiation fee, $107.25. Dues, $3.50 a month.

Painters—initiation fee, $100. Dues, $4 a month.

Glaziers—initiation fee, $100. Dues, $3 a month.

Carpenters — initiation fee, $100. Dues, $2.25 to $2.50 a month depending on local council.

Truck drivers—initiation fee varies



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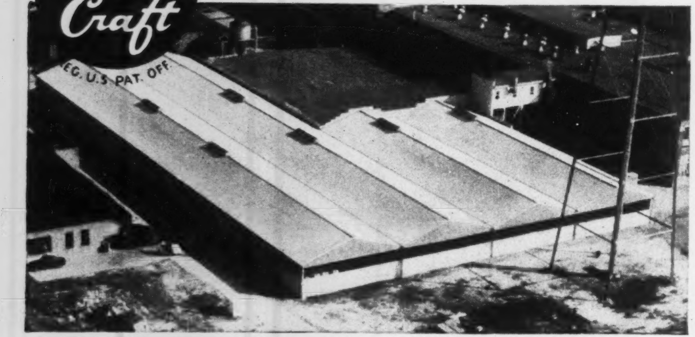
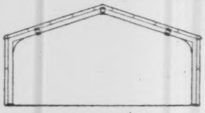
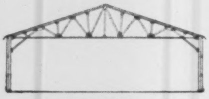


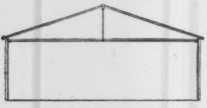
...with a STEELCRAFT METAL BUIDING



RIGID FRAME TYPE



TRUSS TYPE



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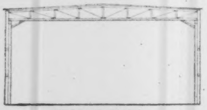

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generally about $50. Dues are $3 a month.

Building and common laborers—initiation $41 plus three months dues making total $47 dues, $2 a month.

British Columbia strikes settled after long seige

Construction industry in the lower mainland area of British Columbia, Canada, centered on Vancouver, is rolling again. Work began following settlement of an 80-day painters' strike and also a 73-day carpenters' strike.

The carpenters' strike was highlighted by a contractors' lockout (ENR Aug. 7, p. 33) when the union started to strike separate jobs. The strike was settled by a 10-cent hourly pay boost to $2.10 (they had asked $2.50), time-and-a-half for overtime for the first two hours and double time thereafter, dollar-a-day reduction in the $2 board-and-room charges out of town, and complete elimination of those charges after Dec. 1.

Painters, threatening to keep carpenters off the job by picketing—if that dispute were settled first—finally won a 20-cent hourly boost for the rest of the year and an additional 10 cents an hour after Jan. 1. They also won an increase in board-and-room allowance on out-of-town jobs from $60 to $75 monthly, with contractors taking over full cost after Jan. 1.

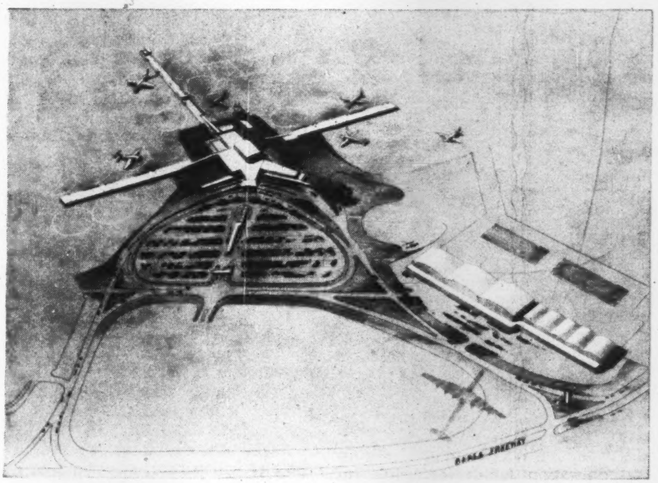
Under the new agreement, brush painters get $1.90 an hour until Jan. 1, $2 per hour thereafter, and spray painters get $2 per hour till the year-end and $2.10 thereafter.

Pre-work conference

About 60 representatives of the Building Trades Unions, the Atomic Energy Commission, and representatives of Peter Kiewit Co., the general contractors, met in Columbus, Ohio, last week to iron out jurisdictional problems.

The conference was held to prevent disputes on the $1.2-billion A-plant soon to be built in Pike County. (ENR, Aug 21, p. 21)

The labor-management group was meeting under auspices of the AEC with a backward glance at constant labor troubles—most of them stemming from jurisdictional disputes—that have plagued AEC's two other huge jobs at Savannah River and Paducah. Contractors and labor at those two sites still are trying to iron out some of these problems.



NO MONEY was spent by Cleveland for the hangars in the lower right of this view of Hopkins Airport. The hangars will revert to the city after 25 years.

Private funds to build new hangars

A $3.5-million hangar installation at Cleveland's city-owned Hopkins Airport will be financed by private capital. The installation will revert to the city after 25 years.

Plans for the hangar project were presented to the city in late August by Gerald Wilson of Thompson-Starrett Co, general contractors. City officials were pleased at the prospect of erection of the hangars at no cost to the taxpayers.

Hangar facilities and aprons will be leased at a rate not to exceed 90¢ a square foot per year with the rent payable only out of revenue from subletting of the facilities, according to an ordinance passed recently by Cleveland's city council.

Another aspect of Cleveland's airport expansion program is a proposed $4.5-million administration building.

Requests for space in the new hangars have come from four major airlines and numerous fixed-base operations.

Twelve obsolete hangars, built by private interests and acquired recently by the city in anticipation of the expansion, will be demolished.

In the new installation there will be three large hangars with five smaller attachments. The unit will be 1,342 ft long.

Two bays will be 270 ft from center to center of columns, with minimum clearance inside doors of 250 ft. One bay will be 270 ft from center to center, and four bays will be 135 ft wide. Depth of the larger bays will be 150 ft and of the smaller ones 130 ft. Height will be at least 32 ft, clear of obstructions.

Apron and taxiway design calls for 60,000-lb single-wheel and 30,000-lb double-wheel loading. A 520-car parking lot will be built.

The plan for use of private funds for the project was offered by James C. Buckley, Inc., of New York, terminal and transportation consultants, according to Claude F. King, Cleveland deputy commissioner of airports.

Thirsty city angrily asks for change in government

While many residents of Helena, Mont., clamored for a change in the city government plan as they watched their lawns withering under the August sun, members of the city council last month voted to begin emergency expansion of the city's water storage facilities.

Lack of the usual summer rains in the mountain watershed that supplies Montana's capital city left streams low and forced the city to begin drawing water from a winter storage reservoir. The council ordered restricted sprinkling, then permitted one hour of hand sprinkling every third day to save the supplies for winter.

Meanwhile, angry property owners, anxious to pin the blame for the water shortage on someone, began circulating petitions to bring to a vote the question of changing from the three-member council form of government to a managerial form.

The city council, in the first of a projected series of emergency measures, granted to McKinnon-Decker Co. the contract for construction of Scott reservoir near the Continental Divide. The small dam—36 ft high with a crest length of 600 ft—will have a possible storage of about 100 acre ft of water.

The council also announced plans to build another reservoir with a capacity of 5,000 to 6,000 acre ft of water as soon as funds are available. As a third possible source of water for Helena, the council considered utilization of Canyon Ferry Dam waters, 17 miles to the east in the Spokane hills.

Helena's city council is considering petitioning the Bureau of Reclamation for inclusion of sufficient water to aid Helena's shortage when the bureau plans for a large ditch to carry waters through a tunnel in the Spokane hills and into the Helena valley.

Sea favors hotels

The Hawaii Public Works Department is fighting a battle with the ocean, and coming off second best.

In an effort to widen Waikiki Beach in March, 1951, it dumped 90,000 cu yd of beach sand into areas worn slim by erosion.

Ever since then, the sea has been redistributing the sands and lugging some away entirely. The public beach areas have lost. Areas in front of the big tourist hotels have gained.

From mid-July to mid-August the public beaches suffered a loss of 3,681 cu yds. The hotel beaches gained 1,919 cu yds and 1,762 cu yds were "net loss."

The territorial department of public works is watching the erosion constantly, charting it, and trying to develop new methods of holding the sand in place.

Groins parallel to the beach give some evidence of being more successful than the more common vertical groins.

Parking garages planned by cities

Construction of two 10-story, elevator-type parking structures for downtown Denver, Colo., instead of ramp-type structures as had been planned originally, was recommended to the city council recently by the city's Off-Street Parking Commission.

The structures would be financed by a recent $4-million off-street parking bond issue.

The elevator-type structures would cost more to build than the ramps, but savings would be made on the land. Only 8 city lots would be needed for the two structures, compared with 15 for the ramps. The same number of cars (930) would be accommodated.

Thomas P. Campbell, city manager of improvements and parks, estimated that about $300,000 would be saved.

Besides the savings in land acquisition, Campbell said that the elevator garages could be operated for about $440,000 a year less than the ramp type.

Meanwhile many other cities were considering or carrying out plans for off-street parking facilities. Here are some of the developments:

• **Baltimore, Md.**—City Off-Street Parking Commission, created in 1949 with a $5-million loan fund, is continuing its program of lending private companies up to 85% of the money needed to build multi-storied parking structures.

Since the start of the program, parking garage operators have completed 13 garages with space for nearly 2,500 cars; have a seven-level structure under way which will park 350 cars; have construction slated for three more garages with capacity of 900 cars; and have plans for four more garages with a capacity of 650.

• **Chicago, Ill.**—Proceeds from a recently marketed $8.3-million revenue bond issue will be used to finance the construction of a 2,359-car underground parking garage in Grant Park on property owned by the Park District.

• **Columbus, Ohio**—Following engineering studies of the parking problem, two alternate plans are under consideration.

Under one of the proposals the city would issue mortgage revenue bonds, buy land, build and operate off-street parking facilities.

Under the alternative program, the city would buy land and lease it to Morrison-Knudsen, Inc., of Los Angeles. The firm would build off-street parking facilities and give title to the city. The firm would then operate them under a 35-year lease.

• **Hartford, Conn.**—Construction of a municipal parking ramp, to be financed by a $2.9-million bond issue (passed in 1950) is expected to get under way later this year.

• **Kansas City, Kan.**—City commissioners recently marketed a $340,000 revenue bond issue to finance construction of a subsurface parking facility. It will be the first of its kind in the city.

• **Kansas City, Mo.**—Bond issues recently authorized by Kansas City voters included $1.5 million in general obligation bonds for urban redevelopment projects which will include the construction of a large off-street parking terminal.

Under the Kansas City plan, city and federal urban redevelopment funds will be used to acquire and clear the property needed for the parking facility. A redevelopment corporation will then be organized to finance, with private equity investment capital, the construction of an off-street parking terminal with a capacity of 2,500 cars. Earnings of the redevelopment corporation will be limited to 8%.

• **Memphis, Tenn.**—Preparations were being made by the city for the sale of $1.2 million in revenue bonds to finance the construction of a 500-car underground parking garage in downtown Memphis.

• **Philadelphia, Pa.**—City Parking Authority has announced plans for the early construction of a $1-million parking garage to serve the city's department store area. It will be the city's first publicly owned parking building.

The garage will be of the self-service type in which drivers will park and lock their own cars.

The Philadelphia authority also has announced plans for another garage in the Rittenhouse Square area.

• **Topeka, Kan.**—An off-street parking project agreement was reached between city officials and members of Park and Shop, an organization of businessmen which will operate the facilities.

The agreement under which the city will build and Park and Shop operate the facilities, calls for construction of a 400-car parking garage and also a surface lot, with additional projects contemplated later.

After Park and Shop raises $100,000 as a guarantee of interest payments, the city will authorize issuance of up to $2 million in revenue bonds.

The agreement provides that if revenues from the facilities are insufficient to pay interest and principal on the bonds, the $100,000 would be tapped for interest payments. If the facilities make a profit, 80% will go to the city and 20% to Park and Shop.

• **Tucson, Ariz.**—A plan to provide 3,500 off-street parking spaces in the city's downtown area at a cost of $5-million, to be financed by municipal revenue bonds, was recently submitted to the city council by a committee. The plan calls for construction of six 4-story parking garages with a total capacity of 2,500 cars. Another 1,000 spaces would be provided by parking lots.

Sewer repair ordered

Queens borough president James A. Lundy, New York City, said that he would order Victor Clemente to open up and repair, at the contractor's own expense, a faulty two-mile $185,000 sewer (ENR Sept. 4, p. 74).

Another city official recommended that Clemente be barred from any more city contracts.

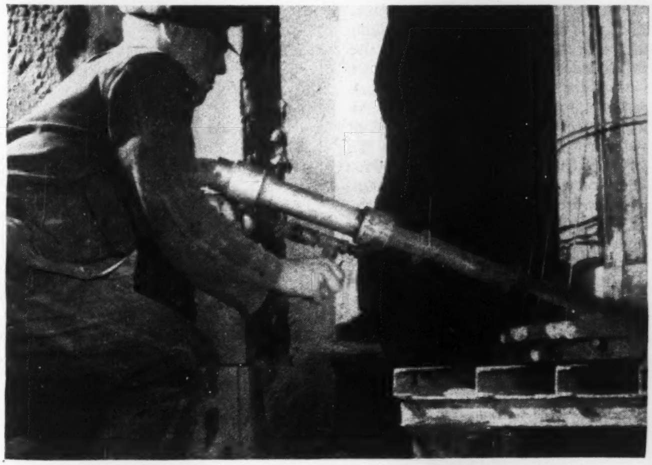
Clemente has promised to remedy defects on the two-mile sewer. Other work awarded to him has either been stopped or not started.

$7-Million Redevelopment Passes Cleveland Council

After lengthy hearings and meeting, Cleveland's city council passed and sent to voters the contested $7 million urban redevelopment issue, part of a $54 million capital improvements program approved by council.

A morning hearing aired protests by residents on the demolition of their homes. Small neighborhood groups have organized to improve their property to save it from destruction.

Also at the afternoon session the so-called "rule" ordinance was discussed and later was passed by council. It will permit Cleveland to go ahead with the program on its own rather than under state law—provided the Ohio Supreme Court agrees.



MAKING PRESTRESSED CONCRETE PIPE that will stretch across Saskatchewan's prairie to sate a growing city's thirst.

Regina builds a 37-mile aqueduct

Regina—capital and largest city of the Canadian Province of Saskatchewan—has under construction a $6-million new water supply that features some 36 miles of prestressed concrete pipe. This aqueduct, when completed, will be capable of delivering 20 mgd to the city's present 72,000 persons—a flow of water estimated to satisfy the demand for the year 2,000.

Water shortage hit this prairie city hard in 1950. Stringent water regulations were put in force, and a scheme to store water in Buffalo Pound lake for delivery to the city was devised.

Water will flow by gravity some 60 miles from the South Saskatchewan River to Buffalo Pound. The big part of the work is to get the water from there about 37 miles southeast to the city of Regina.

Today, a few miles south of the reservoir, construction is well advanced on a $1.3 million filtration plant. Already complete is the 800-ft intake out in the lake. A pumping station at the lake is virtually completed at a cost of about $150,000.

Pipe-laying crews are at work at two locations. At the Buffalo Pound end of the line, work is well under way on 42-in. pipe from the pumping station to the filtration plant. Here there are 3,000 ft of steel pipe and 6,400 ft of concrete. Pigott Construction of Edmonton is doing this work. Concrete Products, Limited, of Regina is working from Regina toward the lake, laying 36-in. prestressed concrete pipe. Work has just begun on this section. Piggott will lay 7,140 ft of steel pipe; in addition to the 3,000 ft at the lake, 4,140 ft of steel will be used to cross the valley of Moose Jaw Creek, where a high pressure flow is anticipated.

Piggott is also laying 22,632 ft of 36-in. prestressed concrete pipe, while Concrete Products is charged with placing 170,592 ft of it—a total of about 36 miles of prestressed pipe.

Concrete pipe is being produced at a Regina plant built by Preload Co. of Canada.

The project will cost about $6 million, with Regina's share about $5 million.

At present, with water rationing, the city uses an average of about 5 mgd. Growth in water-consuming industry is completely impossible.

Mexico is building more power, irrigation dams

Mexican engineers have completed a 15-mi road leading to the site of the projected 150,000-kw hydro-electric plant at Tingambato, west of Mexico City. Drilling of a 6-mi long tunnel is expected to get under way in a few weeks.

The project is part of the Miguel Aleman hydro-electric system, the most important in Mexico.

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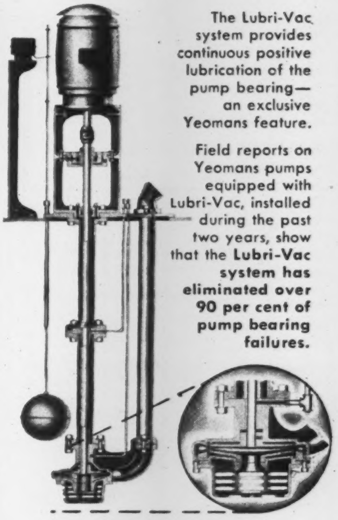

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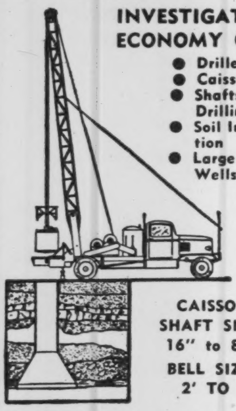

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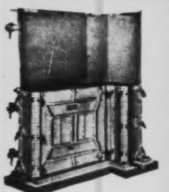

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kw are under construction, while five hydro-electric dams are being built, including the International Falcon Dam near Brownsville, Tex., on the Rio Grande. Mexican officials expect to place in service the Oviachic storage dam, formerly known as the Alvaro Obregon Dam in November of this year. This earthfill structure has a storage capacity for 350,000,000 cu meters of water, and will serve to irrigate a wide agricultural area in the northwestern part of the state of Sonora.

New housing program launched in Ontario

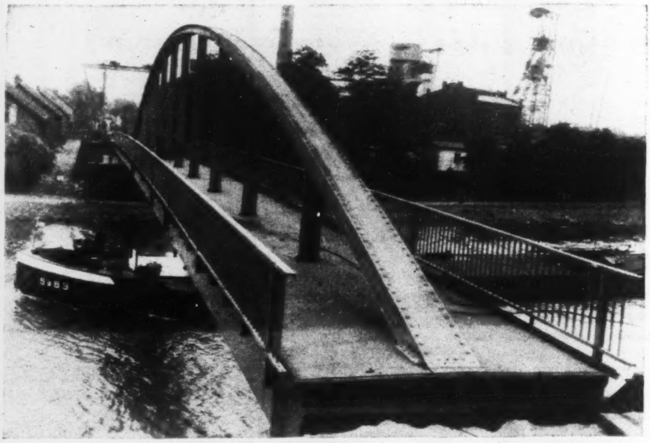
An experimental $400,000 low-rent housing program, financed 90% by a corporation and 10% by the municipality, has been approved by the city council of Ottawa, Ont.

This follows the new housing program launched in Ontario recently, in which 7½% of the 25% provincial share was provided by municipalities.

The Ottawa project is designed to accommodate 50 families. Rentals will be between $50 and $55 a month. Each residence will have six rooms, including three bedrooms and bath on the second floor, as well as a basement and small attic. The buildings are to be of frame, brick veneer construction, arranged in terraces of three 6-unit rows and four 8-unit rows.

Financing of the program is being arranged under Canada's national housing act. The "90-10 plan" is a variation of the act which allows the federal government to provide 75% of the money and the provincial government the remaining 25%.

To finance the Ottawa project, a non-profit corporation will seek a mortgage from the government's Central Mortgage and Housing Corporation. The mortgage is to be amortized over 40 years at 3½% interest. At the end of 40 years, ownership of the projects reverts to the city.



Single rib arch bridge completed in Germany

The first bridge of a new type, proposed several years ago by Wilhelm Haupt, chief engineer of Dortmunder Union Bruckenbau, (ENR Sept. 2, 1948 p. 87), is now in service over the Rhine-Herne Canal near the town of Wanne-Eickle, Germany. Known as a Mitteltraegerbruecke or "middle support bridge", it is a tied arch with only one rib and this placed on the center line of the deck. Although this pioneer structure is only a pedestrian crossing, other designs have been proposed to carry the heaviest highway and street car loads and to utilize trusses and suspension cables as well as arches for the carrying member. One such suspension structure is said to be under study for a site in Stockholm, Sweden.

The Rhine-Herne Canal bridge has a span of 200 ft and a deck width from railing to railing of 11½ ft. This deck which constitutes the tie of the arch rib is a hollow member 10½ ft wide and 2½ ft deep with enough torsional rigidity to assure the stability of the structure under unbalanced loads. The top and sides of the member are of ⅜-in steel plate while the bottom is latticed. The top of the member is treated with a thin plastic bonding layer covered with 1 in. of asphalt as a wearing surface.

The total weight of the steel structure is 61 tons.

MEN AND JOBS

VIRGIL E. GUNLOCK, newly appointed commissioner of Chicago's public works.

Public works veteran gets Chicago post

Chicago's department of public works has a new commissioner, but he isn't a newcomer to either the city or to the field of public works. He is Virgil E. Gunlock, for the last eight years Commissioner of Subways and Superhighways.

Gunlock succeeds Oscar E. Hewitt who retired Sept. 1, after serving almost 20 years.

In his new job, the hard-hitting, dynamic, 47-year-old Gunlock takes command of one of the biggest public works departments in the country.

Coincident with his appointment the DPW is undergoing a drastic expansion. The Department of Subways and Superhighways will become a bureau in the DPW.

Another plan, although not yet crystallized, is the setting up of a consolidated Bureau of Engineering within the DPW. Assigned to this bureau will be the over 500 engineers now working for the DPW, Streets and Electricity, and Subways and Superhighways. Gunlock is also tentatively scheduled to take over such departments as: Parks and Recreation; Rivers and Harbors; Aviation; Architecture and Building Maintenance; Mapping; and the Division of Bridges and Viaducts.

• **Engineering background**–Gunlock's engineering background is rich with public works construction and management. He was graduated from the University of Illinois in 1927 with a BS. of CE. degree. The next year he was employed by the Sanitary District of Chicago where he spent 10 years as engineer on construction of tunnels, bridges and treatment works.

In 1938 when Chicago started its program of subway and superhighway building, Gunlock was appointed resident engineer on the initial subway contract.

From that post he advanced to engineer in charge of construction, then to chief subway engineer. In August, 1945, he was appointed Commissioner of Subways and Superhighways. During this period he pushed construction of the second subway route which was put in operation during February of last year.

Under Gunlock's guidance, work has been started on four main routes of the comprehensive Superhighway system of the city and on the West Side Subway. The four routes are a part of the 67 mi of superhighway to be built, under his direction, at an estimated cost of more than $466 million.

A student of traffic problems, Gunlock is a prominent leader in all movements to relieve traffic congestion and improve Chicago's local transportation. He is a "working" member of nearly a dozen national and local engineering organizations.

Knoxville names new city planning engineer

Latest development in the city planning setup at Knoxville, Tenn., is the appointment of County Planning Engineer W. C. McCammon to the post of city planning engineer.

Knoxville's city planning program has been in an unsettled state since Robert Stuart resigned as city planning engineer early this year.

Under McCammon, the duties of city and county planning engineer will be combined, although the two commissions will retain their separate identities and functions.

Postwar Seabee life

Thousands of men in the building trade unions, who as Seabees helped to build Navy shore establishments during World War II, are the subject of a film entitled "Who's Too Old?"

Produced by the Navy Bureau of Yards and Docks, the film tells the story of a former Seabee now running a construction job.

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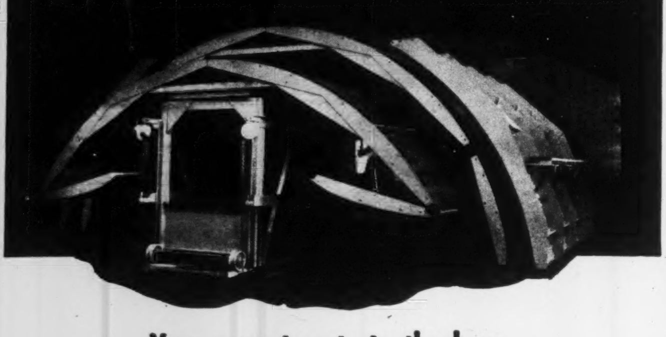

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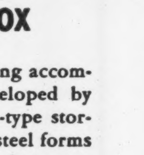

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MEN AND JOBS

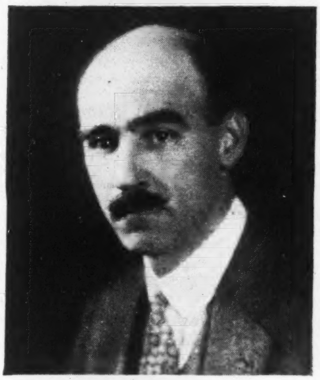
Careers . . .

- **Appointed**—New Director of the Bureau of Rights of Way and Claims, New York State Department of Public Works, is **Paul G. Baldwin** of Binghamton. Baldwin, an employee of the Public Works department for more than a quarter of a century, succeeds **E. Burton Hughes,** newly appointed Deputy Superintendent of Public Works . . . The Portland Cement Association has announced the appointment of **A. A. Anderson** as chief highway consultant. Since 1936, Anderson has been manager of the Highways and Municipal Bureau for the association . . . **Commander Ernest L. Eustis, Jr.,** CEC, USNR, has been appointed officer in charge of the Navy Civil Engineer Corps Officers School, Port Hueneme, Calif. . . . **Robert S. Shaw** of Princeton has been named Chief Public Health Engineer, Division of Environmental Sanitation, New Jersey Department of Health . . . Appointment of **Arthur J. Rector** as Regional Representative of the Administrator in the Housing and Home Finance Agency's Region V with offices in Kansas City has been announced . . . **Charles R. Nuzum,** formerly with the West Virginia and Maryland road commissions, is now Cumberland, Md., city engineer.

Raymond J. Rosenberger, engineer of specifications for the J. E. Griener Co., Baltimore, has taken over duties as engineer of contracts and specifications on the Ohio Turnpike for Griener, with offices in Cleveland . . . Three changes in Atomic Energy Commission personnel at Albuquerque and Los Alamos were announced last week. **Ralph P. Johnson,** manager of the Los Alamos Field Office, will return to Santa Fe Operations office of Engineering and Construction as deputy director. **Paul A. Wilson,** director of the Division of Engineering and Construction at Los Alamos will take over as Los Alamos director of Community Management . . . Two sanitary engineers have arrived in Alaska to assist with sanitation and engineering work of the Alaska Department of Health. **Calvin Winey, Jr.,** will be district sanitary engineer in Anchorage and **Charles A. Froman** will be in Fairbanks.

- **Retired**—**Col. Henry J. Woodbury,** former division engineer of the New England Division, Corps of Engineers, retired from service last month . . . **Roscoe H. Suttie,** professor of Civil Engineering at Yale University, has retired.

OBITUARIES



William Frederick Lamb, 68, who is given major credit for the design of the Empire State Building in New York City, died there Sept. 8. He was a member of the architectural firm of Shreve, Lamb & Harmon.

In 1904 Mr. Lamb was graduated from Williams College and thereafter did graduate work at the Columbia University School of Architecture, and then went to Paris at the Alelier Deglane. In 1911 he received his diploma in architecture from the French government after completing a course at L'Ecole des Beaux Arts. He returned to New York and joined Carrere & Hastings. Later with R. H. Shreve he formed a new firm whose first large commission was the General Motors building. There followed many other important structures, including commercial and industrial buildings and several college edifices.

Charles Edgar Putnam, 71, consulting civil engineer at Seattle, Wash., and retired city engineer of Tacoma, died Aug. 25 at Seattle. He moved to Tacoma in 1906, served as city engineer for eight years. He was a captain in the Army Engineers in the First World War, design engineer for Seattle City Light's Ross Dam project during the second. He also served several years as assistant state highway engineer and on municipal projects at Olympia and Richland.

Rodnet G. Magee, 71, died Aug. 13 in Lockport, N. Y. He was a civil engineer and surveyor for 43 years.

James A. Blalock, 37, division engineer of the Richmond, Fredericksburg and Potomac R.R. Co., died at Richmond, Va., Aug. 29. He was a C.E. graduate of Virginia Polytechnic Institute, 1937. He worked first for the Pennsylvania Railroad, maintenance of way department, and joined the R.F. & P. in 1941, and had been division engineer for the last two years.

Paul R. Brown, 65, Marion County, Ind., surveyor and former Indianapolis city engineer, died Aug. 24. He was graduated from Purdue University in 1910, and during World War I was a captain of engineers on the headquarters staff of Gen. John J. Pershing. He was currently serving his sixth term as county engineer. He also had served as city engineer and as engineer for the Indianapolis Park Department, devoting 37 years in all to public work in Indianapolis.

Gerald Edward Oliver, 23, and **Charles Robert Johnson,** 26, junior civil engineers in the bridge department of the California Division of Highways, were drowned in a boating accident on the Sacramento River Aug. 24.

Harrison Smith, 71, since 1919 with Sanderson & Porter, engineers, and latterly as a partner, died Aug. 21 in Greenwich, Conn. In the second world war he was resident partner in the design, construction and operation of the government-owned ammunition loading plant at the Elwood Ordnance plant, Joliet, Ill. He was a C.E. graduate of R.P.I. 1905, and started his career with the Pennsylvania R.R. on its New York City tunnels. At one time he was on the staff of T. A. Gillespie Co. on the Boston subway and later on drydock construction.

Frank W. Kouwenhoven, 59, former associate professor of engineering at John Hopkins University, died in Baltimore, Md., Aug. 20. He had taught at the university for 26 years before retirement in 1946.

Mario C. Giannini, 50, former assistant dean of the New York University college of engineering associated with the school for 25 years; died Aug. 24, at Winter Park, Fla. Since 1949 he had been assistant dean in charge of the day division.

Otto J. Vinson, 58, civil engineer and office manager for the Fort Worth district of the Texas highway department, died Aug. 23. He was a graduate of the University of Texas and served in the first world war as a first lieutenant with the Engineers. He was with the department 24 years.

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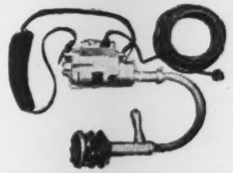

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TOPNOTCH ARCH. Designer-Detailer and Chief Draftsman, specializing in industrial work, wants position with large manufacturer handling building program. PW-5371, Engineering News-Record.

CIVIL ENGINEER, 29, married, experienced in construction layout, cost analysis, expediting, estimating, and coordinating on industrial buildings, tunnel, stadium. Desires position with general or sub-contractor, or factory maintenance department. PW-5388, Engineering News-Record.

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I will share 400 sq. ft. office with licensed Civil Engineer $50.00 per month. Lower Manhattan. Phone and drafting available. Please reply FR-5341, Engineering News-Record.

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New Material—Immediate delivery from stock

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1—400 K.W. Enterprise Dual Fuel Generating Plant consisting of a Mod. DGSG-8 (650 H.P.) Enterprise dual fuel engine direct connected to a 400 K.W. Elliott Mod. 6539, 3ph., 60 cycle, 2400 volt A.C. generator—450 R.P.M. This plant was new in 1948 and is complete with switchboard, filters, cooling system, piping, etc. Has operated approximately 500 hours since overhaul.

Immediately Available!

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Combination 1½ yd. Shovel and Dragline. New 1948. Located Syracuse, N. Y.

Also several 1 H Series
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REX Model 200 Single Pumpcrete with gasoline engine drive and more than 600 ft. Model 80 Pipe Line and Fittings.

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Model 3500 — crane or dragline — 80 ft. boom — manual swing — 20' or 30' jibs — 60 ton lifting capacity — or 2½ c.y. drag bucket.

Model 2000-B — crane or dragline — 60 ft. boom — manual controls — 20' jib — 25 ton lifting capacity — or 1½ c.y. drag bucket.

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New Ingersoll Rand 600' Gyro-Flo Air Compressor.
New Lorain Truck Crane, 25 Ton capacity.

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Marion 392 and Koehring 803 dragline, clamshell, lift crane and pile driver combinations, McKiernan-Terry S-5 and 11B-3 Pile Hammers.

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2—Manitowoc 3000B Cranes,
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1—Marion 1-½ yd. Crane,
Model 362 with shovel front, in very good condition.

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75 tons 6" H 20# 40'
100 tons 8" H 31# 40'
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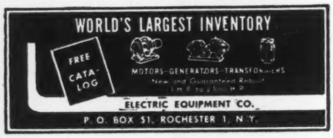

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Model 25 Northwest shovel-drag combination; Model 6 Northwest shovel; Lima 2½ yd shovel w/stripping front also; P & H shovel-drag comb. model 855-B, 2 yd; Thew Lorain Moto Crane w/shovel front also, ½ yd; drag, clamshell and concrete buckets; 9 D-8 Caterpillar tractors, plain to dozers and angledozers, 1H series to 2U series; 2 TD24 IHC tractors w/dozers; HD19 AC tractor w/tipdozer; 4 Euclid rear dump trac-trucks, 49FD model, GMC power; 5 DW 10 Cat tractors, 4 w/Athey trailers, 1 w/Cat wagon, IV series; 4 LeTourneau Tournapuls w/LeT Carryalls; 3 La-Plant-Choate motor scrapers, TS300 models; 2 LeT Tournatrailers, model W210; 3 Athey forged trak-wheel dump trailers; 4 LeT carryall scrapers; Model 122460 Gradall on Duplex truck; rooter; power rollers; 212 Cat patrol; Athey loader.

Also pavers; compressors; welders; drills; pumps; trucks; trailers; Pin drivers; light plants; chain saws; power units; vibrators; water tanks; many, many other items large and small too numerous to mention; most all of this equipment is in good condition, much of it A-1, right ready to do a job for you. Don't fail to attend this sale if you need any of this equipment as it positively sells to the highest bidders!!!

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316 GALLON MIXING TANK—40 GALLON FLUSHING TANK.
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500 lineal ft. narrow gauge rail
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C. I. Water Pipe A.W.W.A. Standard

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C.I. Water Pipe Fittings—B & S—and Flanged—All kinds and sizes

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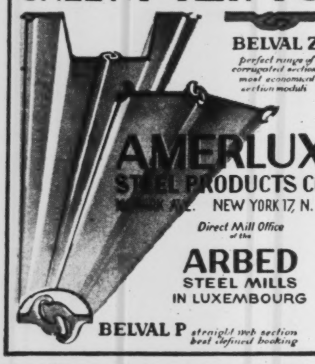

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Stocks in N. Y., Fla., Ala.

350 PCS. ZP-32 LB. 50 FT. Z BAR.
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All sizes Vulcan & McKiernan Pile Hammers & Extractors for rent—Shop Rebuilt

Regardless of location of job. Wire, Write or Phone

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Madsen 4000 lb. Asphalt Plant

with 72" x 30' drier equipped with Hopkins Volcanic low pressure burner, dust collector, and power by Caterpillar Diesels. Two 10,000 gallon insulated hot oil tanks. Littleford 125 H.P. quick steam generator (new August, 1950). This plant was new in July, 1949, and has produced only 50,000 Tons of material. Located in Pennsylvania. This plant is in excellent condition, ready for work, and priced within OPS Ceiling.

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31' Boom, 28' Square Stick
OFF LORAIN 820
Can be used on Lorain 79-80-82-820
Used app. 4 months—like new
Replacement price $15,000   SACRIFICE $7500
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2 at Springfield, Mo. 4 at Newark, N.J.
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80-D Northwest combination shovel dragline
3—27FD Euclid rear dump trucks
Overhauled in excellent condition, 55% new price.

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American 8-¼ x 10 three drum hoist 1845-0 with slewer attachment 1777-A. 75' mast & 60' boom, 4 x 4 x ⅝ angle iron construction, with 1-½ cu. yd. bucket. Perfect condition. New in 1936. Will sell components or complete unit.

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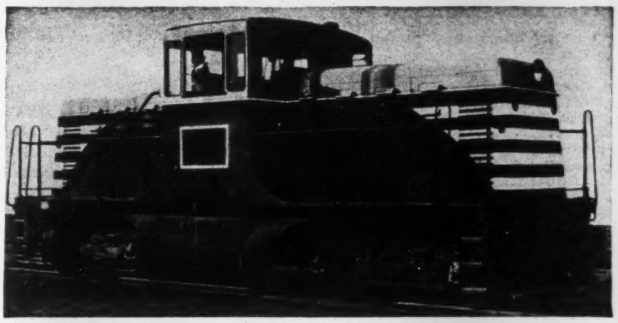

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44-Ton LOCOMOTIVE

Standard Gauge   Excellent Condition
Write for Details

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REBUILT SHOVEL-CRANE-DRAG

1-Mod. 1201 Lima Combination Crane, Dragline and Shovel. Serial 5217. This unit is powered by a Mod. L Cummins Diesel Engine, has 80' of boom, a 3½ yd. dragline bucket and a *new* and *unused* 3½ Yard shovel front. Was new in 1948 and has been used only as dragline and crane. Rebuilt and guaranteed.

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SPECIAL—Lessman high lift loader with fully enclosed cab; new April 1952. Come see it!

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FOR RENT—cranes, draglines, backhoes, buckets, and all other accessories.

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Blaw Knox steel forms for 10-foot circular inside diameter concrete structures. Includes

4—Sets 22 Foot inside barrel forms.
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Model 255A
¾ yd. Crawler Shovel
Also new 35' Boom
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1 Cat. D-8 with Cat. Cable Bulldozer
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4 Euclid 25 FTD Bottom Dumps
1 Buc-Erie B-170 Scrapers
1 Foote-Adnum Black Top Paver
1 Multifoote 34-E Duo-Mix Paver-Double Drum
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1 General 420 Crawler Shovel-Diesel—1 C.Y.
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All machines in excellent condition

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20-ton Truck Cranes 105' boom and jib
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TURBINE: 6000 KW, 3600 r.p.m., 200/225 lbs. I.S.P., 550° F.T.T., 2.5" Abs., Condensing.
GENERATOR: 6000 KW, 3600 r.p.m., 7500 KVA, 80% p.f., 3 phase, 60 cycle, 2300 volt.
EXCITER: 50 KW Turbo Unit, 125 volt, complete operating panel.
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Complete with auxiliaries.

General Electric Turbo Unit

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CONDENSER: Alberger Surface, Size 10C, No. 11626.
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CONDENSER: Elliott-Ehrhart Surface type, 2650 sq. ft.
Complete with auxiliaries.
All above F.O.B. Foundations, South Carolina. Dealers will be protected.

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2—A. Ch. 400 G.P.M., type ML, 6 stage, size 5 x 4, 1614 Ft. Hd.
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Pumps are mounted on bases, for motor or turbine drive.

We have about 200 various size cent. pumps on hand, turbine, motor, and gasoline driven. Send us your inquiries.

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Cat. D7 Bulldozer #4T5988
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Will demonstrate hammer.

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3 AIR COMPRESSORS

3—2000 to 3000 Ft. Cap. or
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1 Pair Allis Chalmer HD14 Tracks
1 Complete set of Rollers
Several sets used D8 tracks
1 Used Bay City Model 65 shovel front will sell outright or trade for backhoe attachment.

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Exceptional BUY on NEW

TRANSITS and LEVELS

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This offer made possible by our method of direct selling to consumer. A savings of over $100 . . . . and the quality is all there.

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2000 lb. or 4000 lb.

State Condition, Age, Make, Location, Etc.

W-5286, Engineering News-Record
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1 Koehring 1½ Yd. Shovel

EXCELLENT CONDITION

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Portable or Fixed—Capacity up to 1" round
Larger unit considered if reasonably priced
Mail complete information, preferably including catalog or photograph.

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Good Condition

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All Makes

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Northwest model 95 Dragline
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FS-5348, Engineering News-Record
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HD-5 A/C Loader, New 1947
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1—Osgood 1½-yd Combination Shovel and Crane, completely rebuilt.
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1—500' Worthington Compressor with 2 wagon drills.
2—10 Wheel Ward LaFrance Dump Trucks.
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FS-5196, Engineering News-Record
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The Oldest Equip. House in Phila.

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35—Air Tanks exactly the same, except with feet and ¼" steel saddle welded to them.
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Phone: Southfield 3591

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OFFICIAL PROPOSALS

APPEAR HERE EACH THURSDAY. PROPOSAL ADVERTISEMENTS ACCEPTED UP TO 10:30 A.M. FRIDAY FOR THE ISSUE DATED THE FOLLOWING THURSDAY.

Bids: September 30, 1952

Nacote Creek Bridge

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

NACOTE CREEK BRIDGE

Raising of Draw Span and construction of Timber Trestle Approaches and incidental roadway work, Nacote Creek Bridge, on Smithfield-Port Republic Road, City of Port Republic, Atlantic County. The principal items of construction are:

Estimated:

64.24	M.B.M. Treated Timber
5,360	lin. ft. Treated Timber Piles
89	cu. yds. Concrete in Structures
2,880	sq. ft. Timber Sheet Piling
L.S.	Raising Existing Draw Span
1,270	sq. yds. Macadam Base Course
140	tons Pavement, Type MA-BC-1, 2" thick

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, September 30, 1952, at eleven o'clock (11:00 A.M.--EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, New Jersey, and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3797) will be received at Indianola, Nebraska, until October 2, 1952, for furnishing labor and materials for remodeling and initial construction for Kansas River District Headquarters Buildings at McCook, Nebraska, Missouri River Basin Project. Location: McCook, Nebraska. Principal items are: Remodeling office building and constructing addition, lump sum; constructing warehouse, lump sum; concrete, 435 cu. yds.; and other work. Completion time 150 days. For particulars, address Bureau of Reclamation, Trenton, Nebraska; or Building 53, Denver Federal Center, Denver, Colorado.

Bids: October 2, 1952

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, Albany, N. Y.—Pursuant to the provisions of the Highway Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on Thursday, October 2, 1952 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract is indicated below. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1						
G. L. Nickerson, District Engineer, 353 Broadway, Albany, New York						
Schenectady	FARC 52-75	Scotia-Saratoga County Line, Pt. 2, S. H. 1609 Proj. No. S-758(2)	4 14	Asp. Conc. Ty. 1A, Opt.	$10,000 Plans $10	$170,000
Warren & & Wash.	FASSH52-14	Harriscena-Fort Ann, Pt. 1, 2A & 2B Proj. No. S-36(3)	4 65	Bit. Mac. Opt. Rd. Mix Twin Box 20′ R. C. Arch Deck 46 54′	23,000 Plans $25	425,000
DISTRICT No. 3						
William Robinson, District Engineer, Weigh Lock Bldg., Syracuse, New York						
Onondaga	FARC 52-8	Syracuse-Lafayette, S. H. 5365 Proj. No. FI-UI-397(3)	2 13	Asp. Conc. Ty. 2A	45,000 Plans $10	844,000
DISTRICT No. 4						
J. P. Larsen, District Engineer, Barge Canal Terminal, Rochester, New York						
Ontario	O. T. 52-13 R. C. 52-98	N. Y. State Thruway-Ontario Section-Sub. 14 (Manchester, Rte N. Y. 21 Interchange) Chapin-Palmyra, Pt. 2, S. H. 1549	2 88	9″ Cem. Conc. Pavt. 12′-52′ Wide (Intch.) = 2 38 Mi. Asp. Conc. Ty. 1A, Opt. = 0 50 Mi. Interchange Alpha I-Beam 261.5′ Hy. Sep. Alpha I-Beam 288′	$41,000 Plans $25	751,000
DISTRICT No. 5						
C. R. Waters, District Engineer, 65 Court St., Buffalo, New York						
Erie	FAC 52-7	City of Buffalo-Humboldt Parkway Extension (Agassiz Cir.-Delaware Ave.) Proj. No. U-1087(2)	0 99 (Acc. 0 67)	Asp Conc. Ty. 2A = 1 59 Mi. Misc. Work = 0 07 Mi.	$45,000 Plans $15	850,000
Erie	FAC 52-13	City of Buffalo-Fuhrmann Blvd. High Level-Bridge (Cont. 1) Proj. U-750(6)	0 31	So. Abut. Piers A & B Subst. and So. Appr. Embankment	$20,000 Plans $10	367,000
DISTRICT No. 8						
J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Westchester	HT 52-3	N. Y. State Thruway-Hudson Section Sub. 9B (Hudson River Bridge)	0 92	Dredging Foundation Work (Including Caisson Piles) & Misc. Work	$725,000 Plans $25	13,208,000
Westchester	R. C. 52-95	Pelham Manor Village, S. H. 5375 Pelham-New Rochelle, S. H. 5374	0 78	Asp. Conc. Ty. 1A Opt.	$4,000 Plans $10	72,000
DISTRICT No. 10						
J. J. Darcy, District Engineer, Montauk Highway, Babylon, Long Island, N. Y.						
Nassau	R. C. 52-93	North Hempstead Turnpike, S. H. 9018 Valley Road Intersection with S. H. 9018(Co. Rd.)	0 30	9″ Cem. Conc. Pavt. (Widen) = 0 13 Mi. Asp. Conc. Ty. 1A Opt. = 0.17 Mi.	$8,000 Plans $10	141,000
Nassau	SSP 52-2	Southern State Parkway	15 33	Drainage Facilities	$26,000 Plans $10	482,000
Suffolk	Detour 52-1	Sunrise Highway Extension (Phylis Drive Detour)	0 90	Bit. Stab. Earth Pavt	$3,000 Plans $10	58,000

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders."

When optional types are permitted on contract with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
SUPT. OF PUBLIC WORKS

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3796) will be received at Friant, California, until October 7, 1952, for furnishing labor and materials for radial gate checks, Station 2524+83.54 and Station 3318+70.0, Friant-Kern Canal, Central Valley Project. Location: Near Orange Cove, California. Principal items are: Excavation for structures, 2,700 cu. yds.; concrete in structures, 1,750 cu. yds.; furnishing and handling cement 2,630 barrels; furnishing and placing reinforcement bars, 212,000 lbs.; installing radial gates and hoists, 158,700 lbs.; and other work. Completion time 455 days. For particulars, address Bureau of Reclamation, Friant, California; or Building 53, Denver Federal Center, Denver, Colorado.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-3799) will be received at Denver, Colorado, until October 16, 1952, for furnishing motor-driven, vertical-shaft pumping units as follows: One 100 c.f.s. capacity pumping unit under a 28-foot total head; one 100 c.f.s. capacity pumping unit under a 26-foot total head; one 100 c.f.s. capacity pumping unit under 34.5 foot total head; and, one 96 c.f.s. capacity pumping unit under 52.5 foot total head for Central Valley Project, California. Delivery is desired within 270 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver, Colorado.

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OFFICIAL PROPOSALS

Bids: September 23, 1952

Shavertown Bridge Piers and Abutments

CONTRACT 415

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 10:00 A.M., Eastern Standard Time, on Tuesday, September 23, 1952, for Contract 415, for the construction of the piers and abutments of the Shavertown bridge, in the Town of Andes, Delaware county, New York. The bridge will cross the valley of the East Branch of the Delaware river at a point about one mile east of the village of Shavertown. The piers and abutments will be constructed of reinforced concrete and partly faced with granite, all as set forth in the specifications.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of the City of New York, in the amount of fifty thousand dollars ($50,000.00), for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained at the office of the Chief Engineer, Room 1311, at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, RUFUS E. McGAHEN, EDWARD C. MAGUIRE, Commissioners, Board of Water Supply; RICHARD H. BURKE, Secretary.

Bids: September 26, 1952

Jackson County, Missouri Clay County, Missouri Missouri River Bridge at The Paseo Kansas City, Missouri

NOTICE TO BIDDERS

Date: September 10, 1952

1. Sealed bids will be received until 11:00 A.M., C.S.T. September 26, 1952, at the Court Room, Jackson County Court House, 12th and Oak Streets, Kansas City, Missouri, and then publicly opened, for construction of four river piers of the above named bridge, in accordance with the specifications, drawings and addenda.

2. The work for which bids are requested includes four concrete river piers, with the following principal quantities: Concrete, 18,400 cu. yd.; reinforcing steel, 800,000 lb.

3. Each bid shall be accompanied by a cashier's or certified check in an amount not less than five per cent of the total amount of the proposal. Bids and cashier's or certified checks may be held for a period of not more than sixty days after the date of opening; thereafter cashier's or certified checks will be returned to bidders not awarded contracts.

4. After receiving notice to proceed, substructure units are to be completed as follows: Piers 3 and 4 within 240 calendar days, Pier 2 in 270 calendar days and Pier 5 in 300 calendar days; delays must be compensated by liquidated damages; performance bond will be required.

5. Copies of plans and specifications are on file and may be examined at the office of the Consulting Engineer, Howard, Needles, Tammen & Bergendoff, 921 Walnut Street, Kansas City, Missouri. Prospective bidders will be supplied with two sets of plans and two copies of the specifications upon depositing $50.00 with the Consulting Engineer, of which $35.00 will be refunded to successful bidders, and to others upon return of the documents. Prospective bidders may secure extra copies of prints at 50 cents each and extra copies of specifications for $2.00 per copy.

OFFICIAL PROPOSALS

6. Bids containing escalation and redetermination clauses will not be considered. The Owner reserves the right to reject any and all bids and to make the award without technicalities as to procedure.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
Consulting Engineers
921 Walnut Street
Kansas City, Missouri

Bids: October 7, 1952

Port Newark, Building No. 141

THE PORT OF NEW YORK AUTHORITY
FOUNDATIONS
CONTRACT PN-200.022

Sealed proposals for the construction of foundations for Building No. 141 at Port Newark will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111-8th Ave., New York 11, until 2:30 P.M., Tuesday, October 7, 1952, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Engineer of Materials, Room 1110, and copies will be furnished upon deposit of $25 per set. Deposit to be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt should then be delivered to the Engineer of Materials who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, September 18, 1952

U. S. Government

BIDS FOR SEWER CONSTRUCTION—Memphis District, Corps of Engineers, U. S. Army, P. O. Box 97, Memphis 1, Tenn. Sealed bids will be received at this office until 11:00 a.m., C.S.T., October 7, 1952, and then opened, for constructing approximately 28,050 feet, 60" concrete pipe sewer, 1 outfall structure, 30 manholes and appurtenant works in Memphis, Shelby County, Tennessee. $25.00 deposit required on plans. Information on request.

Department of Commerce, Bureau of Public Roads, September 11, 1952. SEALED BIDS will be received at the office of the Division Engineer, Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia, until 11:00 a.m., E.S.T., OCTOBER 15, 1952, for Project 2U3, Blue Ridge Parkway, Haywood and Transylvania Counties, North Carolina. 3.985 miles. Grading, draining, crushed gravel or crushed stone base course and other work, from Bridges Camp Gap to Station 140+75. The approximate quantities of the more important items are: 377,100 cu. yd. excavation, 27,500 tons crushed gravel or crushed stone base course, 145 cu. yd. stone masonry, and 2,700 lin. ft. concrete culvert pipe. Minimum wage rates have been fixed as required by law. Plans, specifications, and proposal forms are available upon request at the address given above or Bureau of Public Roads, 920 South Jefferson Street, Roanoke, Virginia. H. J. Spelman, Division Engineer.

UNITED STATES, DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION—NOTICE IS HEREBY GIVEN that sealed bids on Specifications No. 703C-279 for furnishing labor and materials and performing all work for the construction of check structure for Casper Canal—Station 2191+50 and drainage inlets Oregon Trail drain, Kendrick Project, Wyoming, will be mailed to P. O. Box 280, Casper, Wyoming or delivered to the office of the Bureau of Reclamation in time for the public opening at 10:30 a.m., Mountain Standard Time September 25, 1952, at the office of the Bureau of Reclamation, Reclamation Center, Casper, Wyoming.

Copies of the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: Avery A. Batson, Regional Director, Building No. 46, Denver Federal Center, Denver, Colorado; and I. J. Matthews, District Manager, P. O. Box 280, Casper, Wyoming. No charge for copies of the specifications and drawings furnished for bidding purposes; for all others $0.65 per copy, not returnable. Payments should be made by check or money order payable to the Treasurer of the United States.

Defense construction boom to continue

The end of the defense construction boom isn't yet in sight. Economists give it another six months or so—at the very least.

Their bullishness is not the product of fancy trend projections. It is based mainly on firm programs that already have enough momentum to underwrite current high levels of activity until spring:

- Military construction, now running at an annual rate of $2.5 billion a year, is slated to expand by more than $.5 billion.
- Business has announced plans to continue its record outlays for plant and equipment up to the end of the year.
- The Atomic Energy Commission plans an eventual 25% increase over current construction spending.
- The removal of Regulation X should boost housing starts back to the 1951 level, if not higher.

All this guarantees that contractors will keep busy—though not as busy, perhaps, as in record-breaking 1950. Firmness will be the keynote.

Try to look beyond next spring, though, and the crystal ball turns a little cloudy. The dominant tone is still optimism. But it is somewhat muted.

However, the optimism is by no means universal. The newest member of the President's Council of Economic Advisors last week implied that we are at the peak right now.

- **Defense spending**—From practically nothing two years ago, Defense Dept. spending for airfields, shore installations and training camps has risen to a current rate of around $650 million quarterly. This fall, spending will jump another 25%. And, come spring, outlays will peak at a rate that's even a bit higher—say $900 million.

After that, Pentagon plans call for a surprisingly small drop. The 1954 budget request, now under review at the Budget Bureau, totals $3.1 billion for construction. And that's enough to underwrite an $800-million quarterly rate until the summer of 1954.

- **Spending for expansion**—A year ago, capital spending by business began to level off. Since then it has edged sidewise on the highest plateau in history. And it looks now as if the plateau is going to continue.

The regular quarterly survey published jointly by the Commerce Dept. and the Securities & Exchange Commission confirms this for the next three months; business, commerce and SEC report plans to buy new plant and equipment at the annual rate of $27,920 million.

Blue Jay unveiled

The Air Force is finally taking the wraps off its super-secret air base at Thule, Greenland. This week a group of newsmen were flown to the Blue Jay site to see for themselves the progress made on the multi-million-dollar bomber base being built by North Atlantic constructors.

But the newsmen are in for a surprise: A national magazine will have the story, complete with pictures, on the newsstands when they return.

Total estimated cost of the big base—just 1,400 miles from the North Pole—is figured at $263 million. As of the end of fiscal 1952, the Air Force had obligated $165,800,000 for the project and had spent a total of $124,762,000 on this base alone. It will be another year at least before construction is finished.

In addition to keeping the security wraps on project details up to this week the Pentagon's security-conscious brass tried to put the "secret" stamp on the use of the name Thule—a Danish-Eskimo town recorded on most maps for at least fifty years.

There's nothing in the figures to indicate a slump next year. All types of investment continued to climb—though slightly—with the exception of "commercial and other." Yet this group is the one that will benefit most from the removal of restrictions on amusement and other nonessential construction.

- **Spending by AEC**—Right now, the Atomic Energy Commission is spending for construction at a rate of $400 million quarterly. That's the result of a steady two-year climb. But the figure is still rising. Ultimately, the quarterly rate will reach the $500-million mark, before it begins to level off.

This peak, however, won't come until the first half of 1954. Before then, the AEC's spending curve will sag, maybe to as low as $250 million. Here's why:

AEC is now engaged in two construction programs—its basic blueprint and its recently enacted expansion plan. This spring, spending under the basic plan is scheduled to start to taper. And it will be several months before the expansion program gains momentum.

On the average, though, AEC's outlays for construction during the next 18 months are going to be 80 to 100% higher than those of 1950 or 1951.

- **Housing starts**—So far this year, housing starts have been running a little ahead of 1951. From now to year-end, though, the outlook is for a considerably better showing.

Principle reason for the expected improvement is the relaxation of Regulation X. As a result, required down payments will be virtually abolished; and though builders will still demand chunks of cash from buyers, the net effect will be to reduce the biggest financial barrier to home financing.

Almost as important, though, is the condition of the money market. Right now, it's tight; 4% money for VA mortgages is scarce; FHA mortgages, at 4¼%, are only a bit easier to come by. Best guess is, however, that there will be enough cash around to move a larger number of starts—though at higher interest rates.

Next year, though, as the saturation point gets closer, buyers will be more choosey.

Construction industry customers

	1951	1st Q	2nd Q	3rd Q	4th Q
Total	**$26,334**	**$27,430**	**$27,490**	**$27,490**	**$27,920**
Manufacturing	**11,130**	**12,040**	**12,950**	**13,070**	**13,320**
Mining	**910**	**930**	**870**	**810**	**850**
Railroads	**1,474**	**1,570**	**1,480**	**1,260**	**1,280**
Transport, other than rail	**1,492**	**1,470**	**1,350**	**1,480**	**1,480**
Public utilities	**3,854**	**4,140**	**3,990**	**4,040**	**4,200**
Commercial and other	**7,474**	**7,270**	**6,850**	**6,840**	**6,790**

Construction machinery shipments in second quarter, 1952

Type of Equipment	1952 2nd quarter	1952 1st quarter (in thousands)	1951 2nd quarter
Power cranes and shovels..........	$52,756	$51,980	$46,736
Road const. & maint. machy........	46,804	45,434	43,318
Const. machy, mount on tractors.....	22,075	16,763	18,630
Wheel-type tractors	26,261	17,946	14,774
Tracklaying tractors	82,568	78,595	74,544
Trucks & trailers (off-highway type)..	9,716	10,072	8,827
Other	3,134	3,113	3,152
Total	$243,314	$223,903	$209,981

Source: Department of Commerce.

Machinery shipments hit high for quarter

Construction machinery shipments in the second quarter of this year had a total value of $243 million. This set a new record for shipments in a single quarter.

Second quarter shipments were nearly 9% higher than in the first quarter of this year and were almost 16% higher than the second quarter of 1951.

Shipments of wheel-type tractors totaled more than $26 million in the second quarter for a 46% gain over the first quarter, and an increase of 78% over the second quarter of last year.

There were slight increases in the second quarter in shipments of power cranes and shovels, road construction and maintenance machinery, and tracklaying tractors.

Shipments of trucks and trailers, off-highway type, were slightly lower than for the first quarter of this year, but were 10% higher than the comparable 1951 quarter.

HHFA makes plans for temporary AEC housing

The Housing and Home Finance Agency will provide additional family housing needed for construction workers at the Atomic Energy Commission's new gaseous diffusion plant to be constructed in Pike County, Ohio.

Under the agreement with the AEC, the housing agency's responsibility extends only to providing housing for construction workers with families.

If accommodations are needed for single construction workers, the Atomic Energy Commission will provide the housing.

The Housing and Home Finance Agency will also program for private construction whatever permanent housing is needed for AEC operating personnel of the new plant.

HHFA field personnel are making studies now of the temporary and permanent housing requirements of the AEC area. The site is almost certain to be declared a critical defense housing area.

• **Trailers may be used**—The temporary housing will be either house trailers or portable, possibly "relocatable" housing.

In the case of house trailers, the units are purchased with public funds in a national pool and assigned to projects such as these. The portable housing works in the same way. That is, it is paid for by public funds.

Special incentives which were offered builders in the Savannah River AEC project, i.e., rent guarantees will not be offered in Pike County. All of this temporary housing will be publicly owned.

• **Private builders to participate**—All of the permanent housing for the AEC site will be privately built. The builders will apply through the local office of the Federal Housing Administration.

Each builder will apply for the number of units—both rental and sale—that he wants to build. Allocations will be made from the local FHA office.

President boosts funds for college building

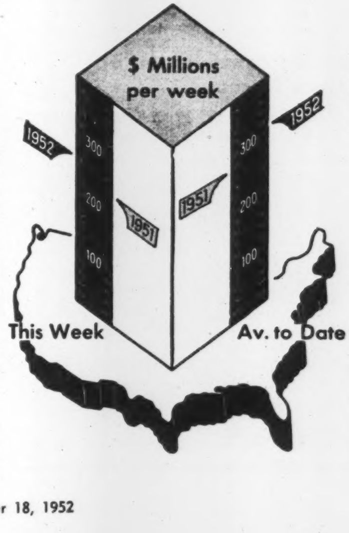
President Truman has increased to $60 million the amount the government can lend colleges for dormitory construction during this fiscal year, the Housing and Home Finance Agency reported last week.

The Agency has had authority to lend $20 million for college housing in the year that ends June 30, 1953.

Congress authorized the government to lend up to $350 million for construction of college dormitories. But President Truman froze this authority after the outbreak of the Korean war. He has "thawed" this spending authority from time to time.

Activity This Week

As reported to ENR
(In millions of dollars)



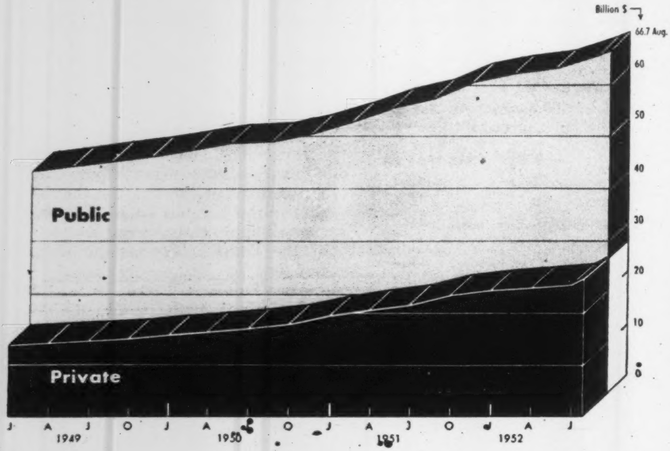
Contracts by type of work

	This Week	Cumulative 38 wks 1952	Cumulative 38 wks 1951	Cumulative 38 wks % chge
Waterworks .	$6.8	$167.5	$159.0	+5
Sewerage ...	8.5	217.8	233.7	−7
Bridges	5.3	286.8	249.7	+15
Highways ..	35.2	1,142.3	892.6	+28
Earthwork, waterways .	10.9	362.3	417.0	−13
Buildings:				
Public	35.9	3,649.4	1,679.9	+117
Housg., pub.	7.5	503.6	553.5	−9
Housg., priv.	90.0	2,210.1	1,433.9	+54
Commercial	17.6	455.8	490.3	−7
Industrial..	18.4	1,964.4	2,963.9	−34
Unclassified.	24.4	978.8	1,315.9	−26
Total	$260.5	$11,938.8	$10,389.4	+15

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR indexes Base Year = 100

		1913	1926	1949
Constr. cost	Sept.	586.47	281.92	122.94
	Aug.	583.69	280.58	122.36
Bldg. cost...	Sept.	424.79	229.63	120.75
	Aug.	422.36	228.32	120.06
Volume	Aug.	1,082	440	313



ENR backlog climbs to $66.7 billion

Engineering News-Record's backlog of heavy construction climbed to a new high in August as $1.4 billion in new projects pushed the cumulative total up to a record figure of $66.7 billion.

Since the outbreak of the Korean war, the backlog has risen by $17.3 billion. Of this amount, $4.5 billion was added in the first eight months of 1952.

Industrial building accounted for $873 million of the total new work going into the planning stage during August.

This type of construction has been responsible for 35% of the increase in total backlog since Korea, and for 58% of the gain made in private work.

Commercial building and private mass housing were other potent factors in the gain in private construction proposed. Together, these two categories of construction added $2.4 billion in new projects.

Private unclassified construction, which includes pipelines, transmission lines, etc., accounted for a $1.9-billion addition to the backlog.

• Private work increases—At the end of August, total private work in the planning stage stood at $26.5 billion. This was a gain of $10.3 billion in the 26 months following the outbreak of the Korean war. Of this, $2.9 billion was added in the first eight months of 1952.

Public construction in the backlog totaled $40.1 billion, as of Aug. 30. This was an increase of about $7 billion since Korea but only a $1.7-billion gain during the first eight months of this year.

More than any other type of public works, public buildings have been the major factor in the growth of the public construction backlog since Korea. Public buildings accounted for $2.8 billion, or 41% of the net increase in the public backlog during that period.

WESTERN STATES ACCOUNT FOR 60% OF ENR BACKLOG, AUG. '52

	Backlog (millions)	% of U. S. total
New England	$ 3,596	5
Middle Atlantic	15,286	23
South	8,168	12
Middle West	11,474	17
West of Miss.	17,042	26
Far West	11,104	17
U. S. Total	**$66,670**	**100**

• Western states dominate – The Western states accounted for 60% of the total U. S. backlog in August. This was not much different from the 59% recorded for these states in June, 1950.

States west of the Mississippi had $17 billion in the backlog in August, representing 26% of the nation's total. This region led in industrial building, with $3.5 billion, and in private unclassified construction, with $2.8 billion.

This section also ranked high with a $2.5-billion backlog of public building and a $1.9-billion backlog in proposed commercial building and private mass housing.

Texas was responsible, to a large extent, for the good showing of the region. It had the highest backlogs for industrial buildings with $1.3 billion, and commercial building and mass housing, with $1.3 billion. Texas also had the largest backlog of any state in private unclassified projects, with $1.2 billion.

The middle Atlantic had the second highest backlog of any single region—$15.3 billion. The Middle Atlantic states led in public buildings with $4.4 billion and also had the highest backlog of commercial and mass housing, $2.8 billion.

New York carried the ball for the region. The Empire State led the

ENR backlog of engineering construction up $17 billion since Korea

	August 31, 1952	June 30, 1950
	(millions of dollars)	
Private	$26,535	$16,224
Industrial buildings	10,724	4,741
Commercial bldg. and mass housing	8,969	6,520
Unclassified	6,842	4,963
Public	$40,135	$33,192
Waterworks	1,513	1,331
Sewerage	2,470	2,169
Bridges*	2,065	1,567
Streets and roads	5,327	4,530
Earthworks, waterways	7,726	7,386
Buildings	14,375	11,532
Unclassified	6,659	4,676
Total	**$66,670**	**$49,416**

*** Incl. private bridges: $46 million, '52; $47 million, '50**

nation in public buildings, with $2.4 billion in the backlog, and nearly matched top-ranking Texas in commercial and mass housing, with $1.3 billion.

A highway backlog of more than $2 billion gave the Middle Atlantic region another first.

The Middle West and the Far West each accounted for 17% of the nation's heavy construction backlog.

The Middle West ranked second in industrial building with nearly $3 billion in proposed work, of which almost $1 billion in public buildings and another $1.5 billion in commercial buildings and mass housing.

The Far West had a $2.9-billion backlog of earthworks and waterways construction. The region was third highest in commercial building and mass housing with $1.6 billion, and in private unclassified construction, with $1.2 billion.

Proposed public buildings in the Far West added up to $2.1 billion. California accounted for more than half of each type of construction.

The South was among the leaders in industrial building with a $1.5-billion backlog and in private unclassified work with $1.3 billion. Public buildings accounted for $1.9 billion of the South's $8.2-billion backlog.

In New England, $1.1 billion for public buildings was the major item in the $3.6-billion backlog.

Tax benefits okayed for oil refinery

An early start on construction of an $18-million oil refinery at Florence, Ariz., has been assured with Defense Production Administration approval of accelerated tax amortization for the project. The refinery will be built by the Proven Oil Co., located in Dallas, Tex.

The refinery, which is scheduled for completion in 1954, is a companion project to a $105.7-million pipeline project which will run from Wink, Tex. to Norwalk, Calif. The 24-in. pipeline will be 953 mi long.

A 32-mi spur will carry petroleum from the main pipeline to the Florence refinery which will process 15,000 bbls of crude oil daily.

Both the refinery and the pipeline are slated for completion in 11 months.

L. M. Glasco, president of the West Coast Pipe Line Co., said the government has approved purchase of 59,000 tons of pipe in the fourth quarter of this year. This is enough for construction of about 275 mi of the pipeline.

Georgia markets $32 million in bonds to launch school building program

The Georgia State School Building Authority last week sold $32 million in bonds to launch a state-wide, four-year school building program that may cost as much as $125 million.

The bonds were first to be offered by the authority which was created to build, repair, improve, alter, operate and maintain self-liquidating projects. The idea is simple: The state authority sells bonds, uses the proceeds to finance construction of schools in communities throughout Georgia, and leases the school buildings to the communities—or school districts. The rentals are then used to amortize the bond indebtedness.

This idea is not new. Pennsylvania used only a slightly modified form to help local communities meet school needs. (ENR Mar. 16, 1950, p. 36). But the two cases are not identical.

Georgia, under the state constitution, is not permitted to issue general obligation bonds using state credit. The state constitution expressly prohibits the state from incurring bonded debt.

The problem then was to devise a bond that would meet requirements of the financial community—and not violate state law.

• **Minimum grants**—Georgia's solution works like this: The bonds issued are revenue obligations of the state school building authority. These are secured first by rentals which local school districts are required to pay the authority. But in the final analysis, the bonds are secured by state-aid funds apportioned to local districts which certify their need for capital facilities.

Key to this method of securing the bonds is the state's pledge to pay out capital-grant subsidies to local districts on the basis of minimum annual grants of $200 per teacher.

• **Maine advances program**—The revenue bond financing principle also is being applied to public school construction in Maine.

The Maine State School Building Authority, which issues revenue bonds to finance new school buildings for lease to localities, recently approved new projects in 10 cities for loans totaling $1.6 million.

Lease agreements between the communities and the authority were scheduled to be submitted to voters this week. Agreements approved will be the basis for a second bond issue for the authority, planned for Oct. 1. The money, in that case, would be available to the municipalities by mid-October.

The new bond issue by the Maine authority will be its last of the current building season, State Education Commissioner William C. Baily said. But another issue is planned to permit start of construction early next spring.

Further issues are planned until the authority's debt-limit of $15 million is reached.

• **California continues program**—Regular state-guaranteed bonds are continuing to be used to aid localities in financing school construction in California. The state allocation board said it planned to sell the last $25-million block of bonds from the $250-million school building bond issue authorized by the voters in 1949.

Although all of the money from the bond issue was previously set aside for school construction, the bonds have been sold only as actual cash was needed for construction payouts. The money is loaned to localities for school construction.

Philadelphia to sell $30 million in bonds

The City of Philadelphia will sell between $20 million and $30 million worth of municipal bonds for capital improvements during October. The announcement was made by City Finance Director Lennox L. Moak.

Moak said that the bonds, already authorized, but not yet issued, would be the last the city would have to sell this year to carry its public works improvements program into 1953.

Theoretically, the proceeds of the bonds will be earmarked for specific projects. Actually, the funds are placed in a consolidated loan fund. This fund is used as required for development of subways, sewers, airports, and other continuing projects.

The forthcoming bond sale will be Philadelphia's biggest since May, 1950, when the city sold $58 million in improvement bonds.

Last April, Philadelphia sold $16.2 million worth of authorized bonds to support public works improvements projects through the summer and early fall. City financial experts said the October sale will be sufficient to meet Philadelphia's cash needs for capital improvements until next April.

Ohio faces financing problems for roads; AEC plant, turnpike brings money woes

The State of Ohio is facing double-barrelled trouble on construction of access roads to feed its turnpike—and roads to serve the new Atomic Energy Commission plant in the Scioto river valley. The trouble is the same in both cases: The state doesn't have the money to build these roads.

After a conference with State Highway Director S. O. Linzell, Gov. Frank J. Lausche said the Scioto valley road needs would involve an expenditure of "at least $10 million." Lausche estimated that turnpike feeder roads would require another $21 million.

Lausche clearly hoped for federal aid when he commented on the problem last week.

"The grave problem confronting the (highway) department is financial. We are going to assume our reasonable share of responsibility, but do hope that we will be given aid similar to that given other parts of the country where other large federal projects were launched," Lausche said.

He added that substantial federal matching funds will be made available, but that if all money available to the Ohio Highway Department were used for such improvements, there would be no money left for other highways of the state.

• Washington studies problem—Ohio's troubles were getting recognition, at least, in Washington. The Bureau of Public Roads said it has started a study of the feeder road problem handed to the State of Ohio when the Atomic Energy Commisison selected a site near Portsmouth for construction of a new huge gaseous diffusion plant.

However, there are no funds now available for access roads that the BPR has not already committed, it said last week. Therefore, it will take congressional appropriations before any federal aid can be given to this construction.

The district engineer of the Bureau of Public Roads in Ohio has undertaken a survey of the problems in the area, at the request of the Atomic Energy Commission. A report is expected in Washington within the next two weeks.

The report, it was said, would spell out the district engineer's analysis of the need for new or improved access roads, which will give an idea of mileage and probable costs.

At the Savannah River AEC project, there were 49 miles of access roads. Federal assistance amounted to $4.3 million. Officials in Washington privately estimated last week that the Portsmouth problem is much smaller. These officials felt that if federal aid were granted it would not exceed $1 million.

• No help at all—Access roads to feed Ohio's new turnpike present a different problem. There is not the slightest hope at this time that Ohio can get any extra federal money to help carry the cost of new roads designed to funnel traffic into the projected toll road. So far, not a single state has received any such money.

One official commented: "At any rate, the turnpike problem is at least a year off, since construction can hardly begin before then. But Ohio's access road problem for the AEC plant is more immediate."

Concrete paving awards down 8% in August

Concrete paving awards, as reported by the Portland Cement Assn. dropped to 6,081,000 sq yds in August, down 8% from the July total.

Concrete road awards remained close to the July level with 2,652,000 yds, but street and alley paving awards dropped to 2,359,000 sq yds.

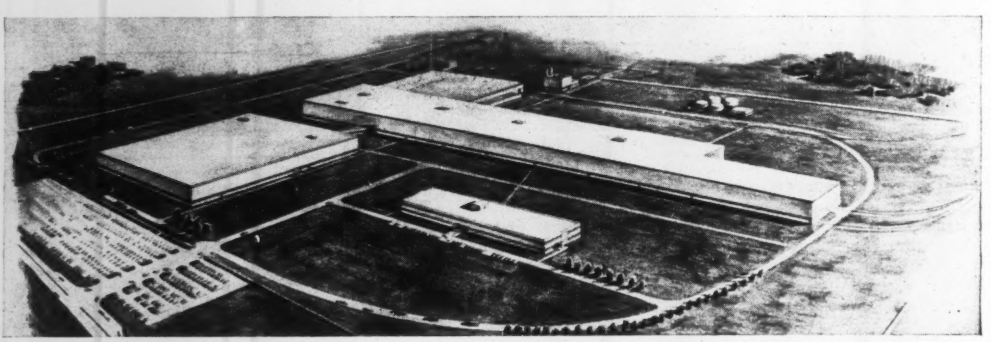
Airport paving hit the highest level since July 1951, with a total of 1,070,000 sq. yds reported.

• Volume trails 1951—For the first eight months of 1952, total concrete paving awards were 7% under the 1951 period, due to the low volume of airport paving.

Airport paving awards were 54% below 1951 with 5,597,000 sq yds, while roads were 11% above last year, with a total of 20,514,000 sq yds, and street and alley awards were 8% higher, with 18,314,000 sq yds awarded.

Canton, Ohio, to vote on $10-million bond issue

Canton, Ohio, will vote in November on eight improvement bond issues totaling $10 million. The issues follow a survey which recommended $3.5 million for street repairs; $1.8 million for sewers; $1.4 million for a new city hall; and $1 million for parks and playgrounds.



TWENTY-FIVE MILLION DOLLAR PLANT for General Electric Co. was approved for fast tax amortization by the Defense Production Administration. The transformer manufacturing plant will be built at Rome, Ga. Bids will be received soon for the project which will include two large manufacturing buildings, an office building and outlying service buildings, all constructed of steel and composition siding.

Hill-Burton program passes half-way mark

Government officials and hospital leaders will join in ceremonies at Lebanon, Ore., on Oct. 12, to mark completion of the one-thousandth hospital to be completed under the Hospital Survey and Construction Act—popularly known as Hill-Burton program.

The act was passed by Congress in 1946 to help communities meet the critical need for new hospital facilities. Of the 1,000 projects now in operation, 525 are new hospitals, 330 are additions to existing hospitals and 145 are health centers.

The federal government has put $500 million into these hospital projects. States and local communities have invested almost twice that much.

In addition to the 1,000 projects completed, another 800 are in various stages of planning and construction. All are built in accordance with state plans which show what kind of facilities are needed—and where.

The first new hospital to be completed under the Hill-Burton program was the Suwannee County Hospital, Live Oak, Fla. This hospital was dedicated in May, 1948. Many of the hospitals subsequently built were located in rural areas; almost 60% of them in communities where the population was 5,000 or less.

A recent survey by hospital authorities showed that even when the Hill-Burton program is complete, the nation will be short of hospital facilities.

First turnpike award to be made next month

Early next month, the Ohio Turnpike Commission will receive bids for sub-structure construction for a bridge to carry its turnpike over the Cuyahoga River, south of Cleveland.

This will be the first letting on the 241-mi, $326-million toll highway to be built across northern Ohio.

Construction plans for the eastern end of the turnpike will be completed in November of this year, according to T. J. Kauer, chief engineer. Bids will be received a month later.

All construction work for the entire project is expected to be under contract by next May, with lettings to be held about once a week.

The eastern 35 mi of the turnpike, from the Pennsylvania-Ohio line to state Route 5, near Warren, Ohio, is expected to be open to traffic by the end of next year.

The entire turnpike is scheduled to be placed in operation early in 1955.

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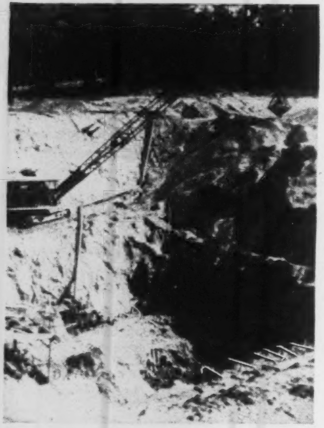

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THIS JOB TOOK great engineering skill—to dig a 37-ft deep pit in fine sand containing 17 ft of water—to do this without collapse of the steep slopes, so that quantity of excavation could be held to a minimum. Furthermore, borings taken only to subgrade had not revealed a silt layer 6 ft below, and this added still another headache, since artesian pressure threatened to "blow the bottom."

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UNIT PRICES

Sewage tunnel and shafts Boston, Massachusetts

Nine bidders went after a $6.3-million contract for a relief tunnel for Massachusetts Metropolitan District Commission. It will serve Boston, Chelsea and Winthrop. The two low bids were within 2% of each other; the high bid was 29% above the low. There was a difference of $19 per cy for tunnel excavation and $17 per cy for concrete masonry for the tunnel in the high and low bid.

Work consists of sinking and lining two shafts at the site of a proposed sewage treatment plant; excavating four miles of tunnel, about 14 ft in diameter before lining, and lining this tunnel with concrete to a diameter of 10 ft; and excavating about 200 ft of spur tunnel; pumping ground water; and building a locker house.

Minimum hourly wage rates for the project are: blaster and miner, $1.925; drill runner, $1.775; equipment operators, $2.35 to $2.80; carpenter, $2.475, and shaft and tunnel laborer, $1.775.

The job must be complete in 1,150 calendar days with liquidated damages set at $200 per day. Bidders include:

1C	S. A. Healy Co., White Plains, N. Y.	$6,335,336
2	Marinucci Bros. & Co. Inc., Dorchester, Mass.	6,495,796
9	Dravo Corp., Pittsburgh, Pa.	8,880,193

Shafts 1 and 2 and relief tunnel

Bids: 5-1-52 Items	Unit	Quantity	Unit prices 1 C	 2
Clearing	ac	2	$500.00	$500.00
Stripping	cy	80	2.00	2.00
Exc, in open cut	cy	100	2.00	5.00
Const shaft 1 to el 1	ls	1	$175,000	$250,000
Exc, shaft 1 below el 1 & in tunnel within 50 ft of shaft center line	cy	2,000	$50.00	$50.00
Other exc, tunnel	cy	106,000	23.00	24.00
Enlarge of shaft 1 or tunnel section	cy	800	20.00	50.00
Drainage channels for shaft 1 and tunnel	lf	21,250	20.00	17.60
Pumping from shaft 2 & below el 1 in shaft 1	M ft ga.	150,000	0.25	0.30
Forms for conc lin in shaft 1 below el 1	lf	170	200.00	75.00
Forms for final lin in shafts 1 & 2	lf	310	200.00	78.75
Forms for conc lin in tunnel	lf	20,770	25.00	25.00
Conc masonry in shaft 1 below el 1	cy	580	20.00	25.00
Conc lin in shaft 1 & 2	cy	1,650	20.00	24.00
Conc masonry in tunnel	cy	50,600	20.00	17.00
P cmt, shaft 1 below 1.0 shaft 2 and tunnel	bbl	110,000	4.50	4.75
Reinf steel, shaft 1 below el 1, shaft 2 & tunnel	lb	34,000	0.15	0.15
Struct stl support & metal piping	lb	497,000	0.20	0.25
Timbering	Mfbm	10	250.00	400.00
Dry packing	cy	2,700	15.00	25.00
Drill holes in rock or masonry	lf	5,700	1.00	2.00
Steel pipe for grouting	lf	9,500	1.50	2.00
Connections, grouting	ea	4,800	3.00	5.00
Sand for grout & protective cover of cemt mortar	cy	150	5.00	5.00
Mixing & place grout	cy	6,000	20.00	32.00
Protect coat of cmt mortar	cy	100	40.00	47.00
Misc lumber	Mfbm	10	300.00	$278.00
Misc refill & embanking	cy	100	2.00	5.00
Fencing	lf	1,200	4.00	4.00
Locker house at shaft 1	ls	1	$10,000	$8,000
Maint & servicing of locker houses at shaft 1 & 2	mo	76	200	1,000
Medical & surgical services	mo	38	1,000	1,000
Sanitary services	mo	38	2,000	1,000
Cleaning up	ls	1	50,000	5,000

Shaft C & spur tunnel

Items	Unit	Quantity	Unit prices 1 C	 2
Const of shaft C to el −8.5	ls	1	175,000	250,000
Exc, in shaft C below el −8.5 & in spur tunnel within 50' of shaft center line	cy	2,200	$50.00	$50.00
Other tunnel exc	cy	900	35.00	26.00
Enlarge of shaft C or tunnel section	cy	100	20.00	50.00
Drain channels for shaft & tunnel	lf	425	15.00	21.10
Pumping from shaft C below el −8.5	M ft gal	1,000	0.25	1.00
Forms for conc lining in shaft C below el −8.5	lf	220	200.00	75.00
Conc masonry in shaft C below el −8.5	cy	725	25.00	25.00
P cmt, shaft C	bbl	1,500	4.50	4.75
Reinf steel, shaft C below el −8.5	lb	2,000	0.15	0.15
Struct stl support & metal piping	lb	13,000	0.20	0.25
Timbering	Mfbm	3	250.00	400.00
Dry packing	cy	30	15.00	25.00
Drill holes in rock & msry	lf	300	1.00	2.00
Stl pipe for grouting	lf	500	1.50	2.00
Connections for grouting	ea	200	3.00	5.00
Sand for grout & protective covering of cmt mortar	cy	20	5.00	5.00
Mixing & placing grout	cy	100	30.00	32.00
Protective coat, cmt mortar	cy	15	40.00	47.00
Misc lumber	Mfbm	2	300.00	278.00
Furn perf bond rate per $1,000			10.00	10.00

Sewer lines, Kansas

At a cost of $199,221, construction is now under way for sanitary sewer extensions for Salina, Kansas. Work includes 29,550 ft of vitrified clay pipe, 8-in. to 18-in.; 4,000 ft of cast iron force main, 8-in. to 16-in.; and a lift station with wet well, pump house and two alternating pumps. All pipe had been placed on order by the owner to be taken over and paid for by the contractor. Force main will be laid for ½ mi in paved street.

Wilson and Company, Engineers, of Salina, are the consultants.

Wage rates to be paid for skilled labor are $2.50 per hour; semi-skilled, $1.75 per hour; and common, $1.25 per hour.

Work began August 20th and must be completed by January 31, 1953. Bidders include:

1C	McCollum Constr. Co., Garden City, Kan.	$199,221
2	Trowbridge-Dehring, Columbus, Nebr.	217,264
4	Griffin Constr. Co., Merriam, Kan.	285,770

Bids: 7-28-52 Items	Unit	Quantity	Unit prices 1 C	 2
Trench & bkfill, 0'-6'	lf	5,785	$0.54	$0.50
6'-8'	lf	8,810	0.79	0.65
8'-10'	lf	7,950	1.35	0.90
10'-12'	lf	5,235	2.10	1.40
12'-14'	lf	3,041	2.80	1.85
14'-16'	lf	2,110	3.00	2.50
16'-18'	lf	600	3.95	3.50
Inundated sand bkfill	cy	2,250	2.50	1.75
Compacted earth bkfill	cy	3,200	2.00	1.50
Wet trenching	lf	7,000	0.59	1.00
V. C. pipe, 8"	lf	27,386	1.30	1.35
10"	lf	715	1.75	1.60
15"	lf	570	3.20	3.75
18"	lf	880	4.20	4.85
V. C. wyes, 6" on 8"	ea	575	2.00	2.50
C. I. pipe, B&S, 8"	lf	50	4.00	4.00
12"	lf	3,920	5.50	6.50
16"	lf	30	9.65	17.50
Shallow manhole	ea	38	135.00	200.00
Stnd manhole, 6' deep	ea	85	130.00	200.00
Drop manhole, 6' deep	ea	11	156.00	250.00
Extra manhole depth	lf	340	17.50	20.00
Brick pavement, cut & rep.	sy	675	8.25	10.00
Conc pavement, cut & rep.	sy	2,170	6.20	8.00
Sewage pump station	ea	1	$25,600	$35,000

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

ELSIE EAVES, Manager ***J. A. MAHONEY, Reports*** ***M. R. ROESSLER, Statistics***

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

▲† N. H., **Portsmouth**—PHOTO LABORATORY—B.A. 9/26—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., photo laboratory, fire and crash station, main post exchange commissary, aircraft shops, training bldg., warehouse, refrigerating, Municipal Airport. Approx. $3,000,000. CD 12/27/51.

▲† N. H., **Portsmouth**—RUNWAY, etc.—B.A. 9/30—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., runway, taxiways, aprons and airfiled, ENG 19-016-53-6. Approx. $5,000,000. CD 9/11 under LB.

▲† N. H., **Portsmouth**—AIO SHOPS—B.A. 10/20—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., AIO shops, auto maintenance shops, Municipal Airport. Approx. $1,000,000. CD 12/27/51.

▲† N. H., **Portsmouth**—BARRACKS, etc.—B.A. 10/24—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., barracks and mess halls, Approx. $5,000,000; hydrant refueling, bulk storage and oil storage, grease, Approx. $1,000,000 both at Municipal Airport. CD 12/27/51.

SOON LETS CONTRACT—BUILDINGS

▲† **Mass., Ayer**—HOUSING—U. S. Eng., 857 Commonwealth Ave., Boston, soon lets contract, construct, manage and finance housing proj. Fort Devens, $1,000-000 to $3,000,000. Plans deposit $50 refundable, Arthur G. Manaselian, 30 Huntington Ave., Boston, archt. CD 7/31.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Consolidated Constructors, Inc.**, 807 Congress St., Portland, Me. CA **$552,600**. AIO compound, 81 motor pool facilities addn.;

R. A. Verrier Constr. Co., 65 Commercial St., Portland, Me. CA **$104,084**. dental clinic, Limestone Air Force Base, Eng. 19-016-52-82, LIMESTONE, ME. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. CD 8/11 under LB.

▲ **NEW HAMPSHIRE**—State Dpt. P. Wks. and Hys., Concord,

Iafolla Constr. Co. Inc., Peverly Mill Rd., Portsmouth, N. H., LB **$1,779,612**, hot b. conc. 1.404 mi. on Central Ave., Dover;

R. G. Watkins & Son, Inc., Exeter Rd., South Hampton, N. H., LB **$180,307**, grading, drainage, surf. treated gravel 3.38 mi. N. H. 118 in Dorchester. Bids Sept. 4. CD 8/27.

† **Halloran Constr. Co.**, 1 Washington St., Providence, R. I. CA. **$522,000**. approx. $500,000. hangar, fire station, warehouses. Eng 19-016-53-4. Municipal Airport. BURLINGTON, VT. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Aug. 27. CD 9/4 under LB.

▲† **John A. Volpe Constr. Co., Inc.**, 54 Eastern Ave., Malden, Mass. CA **$2,796,443**. est. $3,000,000. central heating plant, laboratory wing B CRL, misc. bldgs., Cambridge Research Center for Air Force, Eng. 19-016-53-11, BEDFORD, MASS. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. CD 8/19 under LB.

Mott-Mohr Constr. Co., Inc., 15 Mead St., New Haven, Conn. CA **$969,000**. Junior High SCHOOL addn., alterations, Mapes Ave. and Anthony St., NORTH HAVEN, CONN. Town, Town Hall, North Haven, Conn. Bids July 31, awarded Sept. 3. CD 8/5 under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

† **Jefferson Constr. Co.**, 75 First St., Cambridge, Mass. CA **$567,028**. emergency type FACILITIES, Camp Wellfleet, Eng. 19-016-53-5, WELLFLEET, MASS. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Aug. 22, awarded Sept. 5. CD 8/29 under LB.

Waterbury Constr. Co., P. O. Box 2024, Waterbury, Conn. LB **$878,000**. Grammer SCHOOL Bucks Hill Sect., WATERBURY, CONN. City, Supt. schools, Bd. Educ., Waterbury, Conn. Bids Sept. 8. CD 8/19.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

▲† Del., **Dover**—ROADS, etc.—B. A. 10/9—U. S. Eng., 121 N. Broad St., Phila. Pa., roads, parking areas, walks and sit grading, Dover Air Force Base. $1,000,000. Whiteside, Foster, Damon & Doane, Inc., duPont Bldg., Wilmington, engrs. CD 9/3.

BIDS ASKED—BUILDINGS

N. J., **Fort Dix**—SCHOOL—B. A. 9/23—U. S. Housing & Home Finance Agency, 346 Broadway, New York, N. Y., elementary school on Fort Dix Reservation for Pemberton Twp. Bd. Educ., Brown Mill, $650,000. Alexander Merchant & Son, 1 Elm Rd., New Brunswick, archts.

N. Y., **Great Neck**—SCHOOLS—B. A. 9/23—Bd. Educ., Union Free School Dist. 7, 345 Lakeville Rd., Lake Success, grade school at Grace Ave. and Gilchrest Rd. $578,000 grade school on Clover Dr. off Middle Neck Rd. $500,000. CD 2/20.

▲ Pa., **Harrisburg**—HIGH SCHOOL—B. A. 9/26—Harrisburg School Bd., 121 Chestnut St., alterations and expans. at Edison Junior High School. 19th and Chestnut Sts. $1,500,000. Plans deposit $25. C. J. Pappley, Riverview Manor Apartmenst, archts. CD 5/31/49.

SOON LETS CONTRACT—BUILDINGS

N. J., **Trenton**—CATHEDRAL—Episcopal Diocese of New Jersey, W. State St. and Overbrook Ave., soon lets contract, cathedral superstructure. $500,000. Micklewright & Mountford, 72 Ewing St., Trenton, archts. CD 8/21.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany,

Washbourne Constr. Corp., 18 E. 41 St. and **McLean Grove & Co., Inc.**, 70 E. 45 St., both New York, N. Y. CA. **$1,195,826**. est. $1,269,000. 1.55 mi. City of Watertown: Arsenal St. Fa. C. 52-4. FAGC. 52-5, Jefferson Co. Bids July 24. CD 7/28, under LB.

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany,

Bero Eng. & Constr. Corp., McKinley Bldg., Buffalo, N. Y. CA. **$1,324,907**. est. $1,325,000, 7.28 mi. Belfast Caneadea S.H. 5615, FA.RC. 52-66, Allegany Co.;

Hendrickson Bros., Inc., 63 N. Central Ave., Valley Stream, N. Y. CA. **$735,221**, est. $956,000, 3.03 mi. Sunken Meadow Spur Parkway, Cont. No. 1, SMSP 52-1, Suffolk Co.;

Collins Bros., Waterford Rd., Mechanicville, N. Y. CA. **$2,774,813**, est. $3,020,000, 4.65 mi. New York State Thruway, Catskill Sect. Subdivision 1-3, Slingerlands-Albany S.H. 5237; Albany-Guilderland S.H. 5155, City of Albany; Delaware Ave. and Krumkill Rd.; Russell and Schoolhouse Rds., C.R. 204, C.T. 52-2P. C.T.C. 52-3P. R.C. 52-73, S.T. 52-14, S.T. 5215, Albany Co.;

Madison County Constr. Co., Inc., Madison, N. Y. CA. **$947,944**, 10.95 mi. Auburn-Skaneateles, Pts. 1 and 2, S.H. 9037; Skaneateles Village; Genesee St.; Skaneateles-Lafayette, Pts. 1 and 2, S.H. 8356 and 8360, Marietta-Marcellus. S.H. 971, Cont. No. 1, F.A.R.C. 56-67. Cayuga and Onondaga Counties;

I. & O. A. Slutsky, Hunter, N. Y. CA. **$623,380**. est. $642,000, 4.5 mi. Livingston-Manor-Youngsville, Pt. 2 FA.SS. 52-5, Sullivan Co. Grand total $6,406,265. Bids July 10. CD 7/14, under LB.

▲ **S. J. Groves & Sons Co.**, 19 Rector St., New York, N. Y. CA. **$1,627,451**, utilities and paving, Contr. NA 170.036, Newark Airport, NEWARK, N. J. Port of New York Auth., 111 8th Ave., New York 11, N. Y. Bids July 8. CD 7/14, under LB.

PENNSYLVANIA—State Hy. Dpt., 506 North Office Bldg., Harrisburg

Tri-County Constructors, High School Rd. and Harrison Ave., Elkins Park, Phila. 17, Pa., CA **$552,625**, 19,197 ft. highway of crushed aggregate base with bit. surf., double lane by w/24 ft. divisor, T.R. 202, Bucks Co. Bids Aug. 15. CD 8/19 under LB.

Leo Butler Co., 9217 51 Ave., College Park, Md., LB **$912,701**, interceptor sewer No. D, Cont. 6, WILMINGTON, DEL. City Street and Sewer Dpt., City Hall, Wilmington, Del. Whitman, Requardt & Assoc., 1304 St. Paul St., Baltimore, Md., Engrs. Bids Aug. 26. CD 8/20.

BUILDINGS

LOW BIDS AND CONTRACTS

Walchap Ranch Homes, c/o Stanley Klein, archt., 89-31, 161 St., Jamaica, N. Y. Owner Builds. **$750,000**. 50 HOUSES on tract at Murray St. and 27 Ave. FLUSHING, N. Y.

▲ **Huntley Estates**, c/o Schulman & Soloway, archts., 100-15 Queens Blvd., Forest Hills, N. Y. Owner Builds. Approx. **$7,000,000**. 400 HOUSES on 120-acre site on Secor Rd., HARTSDALE, N. Y.

▲ **Zalman Deanin & Max Bernstein**, c/o Alwin Chassens, Jr., archt., 145 S. Franklin Ave., Valley Stream, N. Y. Owner Builds. **$3,500,000**. 324 HOUSES on 70 acre tract at Jericho Turnpike and Beverly Rd., HUNTINGTON, N. Y.

▲ **Cauldwell Wingate Co.**, 101 Park Ave., New York 17, N. Y. CA. **$3,938,000** general const.;

J. L. Murphy, Inc., 340 E. 44 St., New York 17, N. Y. CA **$662,000**, heating and ventilating for Mariner's Harbor HOUSES (Proj. No. NY 50-20) within area bounded generally by Grand View Ave., Roxbury St., Lockman Ave., Continental Pl., Richmond Boro. MARINERS HARBOR, N. Y. New York City Housing Auth., 63 Park Row, New York 8, N. Y. Bids June 18. CD 6/26 under LB.

▲ **Bronxville Gardens Apartments**, c/o Julius Fishkind, archt., 161-19 Jamaica Ave., Jamaica, N. Y. Owner Builds. **$1,000,000**. two 6-story BUILDINGS on Texas, Georgia and Louisiana Aves., Bronxville, NEW YORK, N. Y.

▲ **Golf Club Estates**, c/o Samuel Paul, archt., 163-18 Jamaica Ave., Jamaica, N. Y. Owner Builds. **$1,500,000**. 45 HOUSES on tract on Atkinson Rd. ROCKVILLE CENTER, N. Y.

▲† **The Ferber Co.**, 16 Johnson Ave., Hackensack, N. J. CA. **$1,731,852**, WAREHOUSES at Seneca Ordnance Depot. ROMULUS, N. Y. U. S. Eng., 80 Lafayette St., New York 13, N. Y. CD 6/23.

▲ **Birchwood-at-Westbury Homes**, c/o Stanley Klein, archt., 89-31, 161 St., Jamaica, N. Y. Owner Builds. **$9,000,000**. 450 HOUSES on 115 acre tract at Newbridge Ave. WESTBURY, N. Y.

John K. Ruff, Inc., 100 W. 22 St., Baltimore 18, Md. LB **$914,600**. est. $1,045,000. 4 story, rein.-con. SCIENCE BLDG. Morgan College, BALTIMORE, MD. State, Dpt. P. Imprvs., 506 Park Ave., Baltimore, Md. Bids Sept. 4. CD 8/18.

† **John McShain, Inc.**, 17 and Spring Garden Sts., Phila., Pa. CA **$869,500**. APARTMENT bldg. No. 20 National Institute of Health, Proj. 18-063, BETHESDA, MD. General Services Admin., Public Buildings Service, 19 and F Sts. N.W., Wash., D.C. Bids Aug. 12, awarded Sept. 5. CD 8/18 under LB.

SOUTH

BIDS ASKED—BUILDINGS

Ga., **Atlanta**—PLANT—After 10/1—Montag Bros., Highland Ave., mfg. plant. Approx. $750,000. Moscowitz, Willner & Millkey, 761 Peachtree St. N.E., Atlanta, archts.

▲ Va., **Newport News**—HOUSING—B.A. 10/10—Newport News Redevelopment & Housing Auth., 741 34th St., 340 housing units and admin. bldg. Va. 3-5. $3,200,000. Plans deposit $25. Harrison, Ballard & Allen, 123 E. 77 St., New York 22, N. Y., housing consultant. Williams, Coile & Blanchard, 3415 Virginia Ave., archts.-engrs. CD 11/17/50.

▲ Ala., **Birmingham**—PLANT—B.A. After 10/15—Cosby-Hodges Milling Co., 1501 First Ave. S., plant, $1,000,000, Paul Berg, Decatur, Ill., engr. CD 7/2.

Miss., **Greenville**—SCHOOL—B.A. After 10/15—Greenville School Bd., high school, $600,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Dyson & Co.**, 806 W. Romana St., Pensacola, Fla. LB **$1,583,000**, supply warehouse, NOY 29322, PENSACOLA, FLA. Officer in Charge of Construction, U. S. Naval Air Station, Pensacola, Fla.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Latin America
Public Buildings
Commercial Buildings
Industrial Buildings
Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects invloved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

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▲ **ALABAMA—State Hy. Dpt., Montgomery,**
Hewitt Contg. Co., Buena Vista Rd., Columbus, Ga. CA **$2,146,284.** Grading, drainage, pavement 5.805 mi. part of Montgomery-Birmingham Rd., Shelby and Jefferson Counties, Proj. FI 99 (5) and 147 (3). CD 8/27, under LB.

† **Clark-Farrell Constr. Co.,** Brinkley, Ark. CA **$692,336.** 3,770,000 cu. yd. channel Excav. for Cane River-Red Bayou Diversion Channel, Natchitoches and Rapids Parishes, inv. 53-10, LOUISIANA. U. S. Eng., foot of Prytania St., New Orleans 9, La. CD 8/26, under LB.

Barber Bros. Co., P. O. Box 629, Baton Rouge, La. CA **$501,312.** c. conc. street paving, LAFAYETTE, LA. City, Lafayette, La. CD 9/9 under LB.

† **Worthington Pump & Machinery Corp.,** 401 Worthington Ave., Harrison, N. J. CA. **$913,146.** Contr. B, 7 pumps, 9 motors for Beargrass Creek Pumping Station, CIVENG 15-029-53-13, KENTUCKY. U. S. Eng., 830 W. Broadway, Louisville 3, Ky. Bids Aug. 26, awarded Sept. 9. CD 9/2, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Howard Shockey & Son, Winchester, Va., **CA. $729,600.** Clark County HIGH SCHOOL, BERRYVILLE, VA. Clark Co. School Bd., Berryville, Va., Bids Aug. 14. CD 8/20 under LB.

▲ **F. S. Widre & Assocs.,** 726 Jackson Pl., N. W. Wash. D. C. CA. **$4,000,000.** construct manage, and finance, 412 APARTMENT units. FORT EUSTIS, VA. U. S. Eng., foot of Front St., Norfolk, Va. CD 6/21/51 under LB.

† **Shafter Constr. Co.,** Greensboro, N. C. CA **$535,466,** Part A, WAREHOUSE. Eng 31-075-53-1. FORT BRAGG, N. C. U. S. Eng., 308 Customhouse, Wilmington, N. C. CD 6/23.

M. L. Skinner, New Bern, N. C. CA. **$556,859,** New River Elementary SCHOOL, Proj. N. C. 52-C-7-1, JACKSONVILLE, N. C. Bd. Educ., Onslow Co., Jacksonville, N. C. Bids Aug. 26. CD 9/4, under LB.

▲ **Veterans Loan & Realty Co.,** 743 Greene St., Augusta, Ga. Owner Builds. **$1,500,000.** 215 RESIDENCES, AUGUSTA, GA.

▲ **Finrad Builders, Inc.,** 211 N. E. 97 St. Miami, Fla. Owner Builds. **$1,000,000.** 100 RESIDENCES, HOMESTEAD, FLA.

Plaks Constr. Co., 50 N. W. 14 St., Miami, Fla., CA Approx. **$600,000.** HOTEL addn., MIAMI BEACH, FLA. Shelborne Hotel, 1801 Collins Ave., Miami Beach, Fla.

Demetree Builders, 1619 Hendricks Ave., Jacksonville, Fla. Owner Builds. **$750,000.** 85 RESIDENCES, ORLANDO, FLA.

J. F. Holley, 905 Sixth Ave. N., Birmingham, Ala. LB **$728,300.** HOSPITAL, BIRMINGHAM, ALA. Holy Family Hospital, c/o Pembleton & Mims, archts., Title Guarantee Bldg., Birmingham, Ala. Bids Sept. 4. CD 8/21.

▲† **Bruce Constr. Co.,** 1118 N.E. 2 Ave., Miami, Fla. CA. **$5,925,874.** WAC training facilities, Eng. 01-076-52-73, Anniston, FORT MC CLELLAN, ALA. U. S. Eng., P.O. Box 1160, Mobile 7, Ala. CD 8/26, under LB.

† **Harmon Constr. Co.,** 100 S. Indiana St., Oklahoma City, Okla., LB **$820,150,** WAREHOUSE, NOy 71564, MEMPHIS, TENN. P. Wks. Office, Dpt. Navy, Naval Base, Charleston, S. C.

MIDDLE WEST

BIDS ASKED—BUILDINGS

▲ **Wis., Madison**—STORE—B.A. 9/23—Sears, Roebuck & Co., 8 E. Congress St., Chicago, Ill., 2 story, part bsmnt., 90x225 ft., store, $1,484,000. Carr & Wright, Inc., 333 N. Michigan Ave., Chicago, Ill., archts. CD 5/10/50.

▲ **Ill., Summit**—SCHOOL—B.A. 9/24—School Dist. No. 217, 2 story, bsmnt., high school, gymnasium, swimming pool, $1,200,000, Burnham & Hammond, 53 W. Jackson Blvd., Chicago, Zone 4, archts.

Ind., Indianapolis—SCHOOL—B.A. 9/26—Bd. School Comn., M. V. Bailey, bus. dir., 150 N. Meridian St., 1 story, brick, steel high school, $800,000. Plans deposit $50, D. A. Bohlen & Son, 930 State Life Bldg., Zone 4, archts., Bevington, Taggart & Fowler, 730 Ind. Pythian Bldg., Zone 4, mech. engrs. CD 4/15.

Wis., Milwaukee—SCHOOL—B.A. 9/29—Bd. School Directors, 1111 N. 10 St., Milwaukee, Zone 3, 1 story L-shaped 257x273 ft., S. 55 St. School $800,-000. Plans deposit $50. Fritz von Grossmann & Assocs., 4630 W. Burleigh St., Milwaukee, Zone 10, archts. CD 4/8.

Wis., LaCrosse — HOSPITAL — B.A. 10/7—LaCrosse Lutheran Hospital Assn., 1910 South Ave., 4 story 40x144 ft. concrete, brick hospital addn. $700,000. Plans deposit $50. Boyum, Schubert & Sorensen, Hoeschler Bldg., archts. CD 8/4/50.

Wis., Milwaukee—LABORATORY—B.A. 10/22—Bd. of Regents of State College, Madison, campus laboratory school. $750,000. Plans deposit $25. Eschweiler & Eschweiler, 724 E. Mason St., Zone 2, archts. CD 5/23.

▲ **Mich., Detroit**—HOUSING—B.A. 11/2—Detroit Housing Comn., 409 Griswold St., six 14 story, brick, steel housing bldgs., Area 2, Brester, Hasstings, Winder and St. Antoine Sts. Harley, Ellington & Day, Inc., 153 E. Elizabeth St., archts. CD 1/23/52.

Mich., Livonia—FACTORY—Bids Asked—General Motors Corp., Detroit Transmission Div., General Motors Bldg., Detroit, 1 story, brick, steel factory addn., Plymouth Rd., $82,000, Argonaut Realty Div., 304 General Motors Bldg., Detroit, archts.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **H. W. Miller Constr. Co. Inc.**, 1511 Neave St., Covington, Ky., LB **$678,615**, sewage disposal plant;

Miller Constr. Co., 375 S. Princeton Ave., Columbus, O. LB **$414,395**, vitr. sewer pipe; LB **$404,918**, rein.-con. pipe for sanitary sewer trunk line, ATHENS, O. City, Athens, O. Bids Aug. 5. CD 7/22.

▲ † **Swan Constr. Co.**, 501 W. 11 St., Newport, Ky. CA. **$1,120,573**. warehouse for Gentile A. M. C. Spec. Depot Air Force Base. Eng 15-029-53-16. DAYTON, O. U. S. Eng., 830 W. Broadway, Louisville 3, Ky. Bids Aug. 28, Awarded Sept. 8. CD 9/3 under LB.

INDIANA—State Hy. Comn., State House Annex, Indianapolis, Zone 4,

Rieth-Riley Constr. Co., 311 W. Monroe St., Goshen, Ind. CA, **$923,773**, est. $1,003,583, rein.-con. pavement, State Rd. 31, from Edinburg to near Columbus, Rd. Contr. 3502 Bartholomew Co. Bids Aug. 12. CD 8/15 under LB.

▲ **ILLINOIS**—State Div. Hys., Centennial Bldg., Springfield,

Allied Structural Steel Co., 20 N. Wacker Dr., Chicago 6, Ill. LB **$1,291,561**. furnishing structural, cast steel for bridge over Illinois River, Rte. 4, Beardstown, Cass and Schuyler Counties.

FitzSimons & Connell Dredge & Dock Co., 10 S. LaSalle St., Chicago, Ill. LB **$218,265**. repairs to bridge on Ill. Rte. 178, LaSalle Co. Bids Sept. 9. CD 9/4.

P. Nelson & Son, 115 S. 4 St., La Crosse, Wis., CA, **$554,000**, general contract, sewage disposal plant addn., alterations, LA CROSSE, WIS. City, La Crosse, Wis. Bids Aug. 12. CD 8/25, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Leo Reuth & Sons**, 1050 Cherry St., Hammond, Ind. CA **$1,185,500**. 2 story, Woodrow Wilson SCHOOL, HAMMOND, IND. City, 5935 Hohman Ave., Hammond, Ind. Bids Aug. 28, awarded Sept. 1. CD 8/1.

▲ **Sherman Olson Co.**, 600 W. Jackson Blvd., Chicago 6, Ill. CA **$1,000,000**. 94,000 sq. ft. FACTORY 16 and Gardner Sts., Broadview, CHICAGO, ILL. Templeton Kenly & Co., 1020 S. Central St., Chicago, Ill. Bids Aug. 11, awarded Aug. 28. CD 8/4.

Simpson Constr. Co., 235 Ogden Ave., Chicago, Ill. CA **$747,171**. Jenner Grade SCHOOL, 1009 N. Cleveland St., CHICAGO, ILL. Bd. Educ. 228 N. LaSalle St., Chicago 1, Ill. Bids Aug. 8, awarded Aug. 28. CD 8/18 under LB.

▲† **Sumner Sollitt Co.**, 307 N. Michigan Ave., Chicago, Ill. LB **$3,700,000**. electronics supply DEPOT incl. office, paving, GREAT LAKES, ILL. Dist. P. Wks. Office Bldg. 1A, Ninth Naval Dist., Great Lakes, Ill. Bids Aug 19. CD 7/23.

▲ **Houdry Process Corp.**, 225 S. 15 St., Phila., Pa., CA. **$5,000,000**. REFINERY addn., ROBINSON, ILL. Ohio Oil Co., 539 S. Main St., Findlay, O. CD 8/15/51.

Peterson Constr. Co., 616 National Bldg., Minneapolis, Minn., LB, **$918,000**, HIGH SCHOOL, EAU CLAIRE, WIS. St. Patricks Regis High School, 322 Fulton St., Eau Claire, Wis. Bids Aug. 27. CD 8/13.

D. Oudenhoven Constr. Co., Kaukauna, Wis. CA. Approx. **$800,000**. 2 story part bsmnt., L-shaped grade SCHOOL and convent, KAUKAUNA, WIS. Holy Cross Catholic Congregation, Kaukauna, Wis. Bids Aug. 25. CD 8/20.

Johnson, Drake & Piper, 1138 Baker Bldg., Minneapolis, Minn., LB, **$769,979**, general contract, 1 story, part 2 story, LIBRARY, and training school bldg. at Wisconsin State College, PLATEVILLE, WIS. Bd. Regents of State Colleges, Madison, Wis. Bids Aug. 15. CD 7/18.

▲ **Kileen & Wille Constr. Co.**, 1402 Poplar Ave., Superior, Wis., LB **$1,948,778**, HOUSING project, Wis. 1-2, 136 unit Wis. 1-3, 64 units. SUPERIOR, WIS. Superior Housing Auth., Superior, Wis. Bids Aug. 27. CD 8/6.

▲ **Chicago Building Co.**, 3518 Cadillac Tower, Detroit, Mich. Owner Builds. est. **$5,000,000**. 500 brick single HOMES, Dix and Toledo Hy., Eureka St., ECORSE, MICH.

▲ **Frank L. Vilardi**, 16560 Wyoming St., Detroit, Mich. Owner Builds. est. **$1,500,000**. 75 brick ranch HOMES, Telegraoh Rd., FRANKLIN VILLAGE, MICH.

▲ **Edward Rose Constr. Co.**, 14900 Linwood St., Detroit, Mich. Owner Builds. Est. **$2,000,000**. 200 brick single HOMES, Hartung Airport area, GRATIOT, MICH.

Edward Rose Building Co., 14900 Linwood St., Detroit, Mich. Owner Builds. est. **$950,000**. 90 brick single HOMES, Kelley and 8 Mile Rds., HARPER WOODS, MICH.

▲ **E. J. Corrick**, 5210 Courvie St., Detroit, Mich. Owner Builds. est. **$1,000,000**. 100 single brick HOMES, Damman and Beaconfield Sts., HARPER WOODS, MICH.

▲ **Hannan Real Estate Exchange, Inc.**, 300 Lafayette, Bldg., Detroit, Mich. Owner Builds. est. **$3,000,000**. 300 brick HOMES, Golf View Park subdivision, Five Mile Rd., REDFORD, MICH.

▲ **Edward Rose Constr. Co.**, 14900 Linwood St., Detroit, Mich. Owner Builds. Est. **$3,200,000**. 300 brick single HOMES, Sunnyside, Avalon, Mack and St. Joan Sts., ST. CLAIR SHORES, MICH.

WEST OF MISSISSIPPI

BIDS ASKED—BUILDINGS

Tex., Bay City—SCHOOL—B.A. 9/30—Bay City Independent School Dist., c/o supt., Bay City, brick, concrete fdn., Eastside Elementary School and Jefferson Davis Elementary School. $636,000. Plans deposit $25. Wyatt C. Hedrick Co., 5201 Fannin St., Houston, archt. CD 5/28.

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8221 Atlantic Ave., P.O. Box 631, Bell, Cal.

▲ **Tex., Houston—PLANT—Bids Asked—Diamond Alkali** Co., 1006 Main St., chlorine **plant, $8,750,000. CD** 8/26.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **S. E. Evans Constr. Co.,** Box 903, **Fort** Smith, **Ark.** LB **$1,551,679.** WW imprvs. Sect. 1;

Davidson & Steele, Fort Smith, Ark. LB **$365,765.** WW imprvs. Sect. 2, FORT SMITH, ARK. City, Fort Smith, Ark. Bids Sept. 3. CD 8/20.

† **Henry Hackett,** Rapid City, S. D., LB **$1,510,538,** army support facilities, Rapid City Air Force Base. Inv. 25-066-52-132. **Rapid City, S. D.** U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Sept. 9.

▲† **Dobson Bros. Constr. Co., Abel Constr. and Robinson Constr. Co.,** 512 1st Natl. Bank Bldg., Lincoln, Neb., LB **$5,198,100** asphalt, **$5,353,525,** concrete, for parking aprons at Lincoln Air Force Base. Inv. 25-066-53-4. LINCOLN, NEB. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Sept. 3. CD 7/17/52.

▲ **Brown & Root, Inc.,** Box 3, Houston, Tex., CA. **$3,222,542,** Canal work for 13 mi. San Jacinto River Water Supply Proj. HOUSTON, TEX. City, City Hall, 900 Brazos St., Houston, Tex. Bids July 24. CD 7/29, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Cowen Constr. Co.,** Shawnee, Okla., and **Secor Bldg. Co., Inc.,** to N. E. 26 St., Okla. City, Okla., LB **$2,111,999.** 3 WAREHOUSES at 832 Air Force Specialized Depot, Proj. 14-078, TOPEKA, KAN. General Services Administration, Public Bldgs. Service, 19 and F. Sts., Wash., D. C. Bids Sept. 10. CD 8/19.

Hahner & Foreman, 121 N. Waco St., Wichita, Kan. LB **$881,785.** newspaper bldg., WICHITA, KAN. Beacon Publishing Co., Beacon Bldg., Wichita, Kan. Bids Aug. 23. CD 8/12.

Whipple Constr. Co., 2456 Bissonnet St., Houston, Tex. Owner Builds. Approx. **$440,000,** Job. No. 5, 22 DWELLINGS; Approx. **$310,000,** part of Job No. 8, 55 DWELLINGS, HOUSTON, TEX. CD 3/28.

FAR WEST

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Cisco Constr. Co.,** 1710 S.W. 3 St., Portland, Ore., CA, **$687,000.** 20 and 30-in. feeder mains to connect Richland water system to new and existing reservoirs, RICHLAND, WASH. Atomic Energy Comn., Richland, Wash. Bids Aug. 21. CD 9/8, under LB.

▲ **CALIFORNIA**—State Div. Hys., P. Wks. Bldg., Sacramento,

Granite Constr. Co., Box 900, Watsonville, Calif., CA **$2,529,641.** grading, c. conc. subgrade, 8.1 mi. grade separation structures between 68 at Gish Rd. and Warm Springs, Santa Clara and Alameda Counties, IV-SC1 Ala 69-5-A, E. C. Bids Aug. 13, awarded Sept. 2. CD 8/19 under LB.

† **N. P. Van Valkenburgh Co.,** P. O. Box 1192 Sacramento, Calif. CA. **$584,767.** exten. utilities, Eng. 53-107, CASTLE AIR FORCE BASE, CALIF. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids Aug. 26, awarded Sept. 5. CD 9/3, under LB.

Bosko & Bradarich Co., 8512 Fishman Rd., Pico, Calif. LB **$546,745.** Sect. C, Valley outfall relief sewer in Van Owen St. Etiwanda to Winnetka Ave., LOS ANGELES, CALIF. City, City Hall, Los Angeles, Calif. Bids Sept. 3. CD 8/21.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **C. H. Elle & Vitt Constr. Co.,** 390 Yellowstone Ave., Pocatello, Idaho. CA. **$1,987,000.** 400 HOUSING units, Air Force Base, MOUNTAIN HOME, IDAHO. Housing & Home Finance Agency, Normandy Bldg., 1626 K St. N.W., Wash., D. C. CD 8/7, under LB.

▲† **Louis C. Dunn & Carrico & Gautier,** 799 Monadnock Bldg., San Francisco, Calif. LB, **$2,932,712.** Sch. A, WAREHOUSES Nos. W 11 and W 12, hardstand pavement areas 59 and 60, Benicia Arsenal, Eng. 04-203-53-108, BENICIA, CALIF. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids Sept. 4. CD 8/14.

▲ **Bollenbacker-Kelton,** 8250 Lake Murray Blvd., La Mesa, Calif. CA **$2,700,000.** 300 frame, stucco DWELLINGS, Lake Murray Manor, LA MESA, CALIF. San Diego Federal Savings & Loan Assoc., Sixth Ave. and A St., San Diego, Calif. L. C. Major & Assoc., 511 S. LaCienega St., Los Angeles, Calif., archts.

▲ **Bollenbacker & Kelton,** 945 N. LaCienega Blvd., Los Angeles, Calif. CA **$1,625,000.** 250 frame, stucco DWELLINGS, Dominguez St. and Inglewood Ave., REDONDO BEACH, CALIF. Bolson Corp., 945 N. LaCienga Blvd., Los Angeles, Calif. L. C. Major & Assoc., 511 N. LaCienega Blvd., Los Angeles, Calif., archts.

▲ **Bollenbacker & Kilton,** 945 N. LaCienega Blvd., Los Angeles, Calif. CA **$1,137,500.** 179 frame and stucco DWELLINGS, in tract 17921, TORRANCE, CALIF. Builders Mortgage Co., 8941 Santa Monica Blvd., Los Angeles, Calif. L. C. Major & Assoc., 511 N. LaCienega St., Los Angeles, Calif., archts.

Louis C. Dunn, Inc., 3101 Wilshire Blvd., Los Angeles, Calif. CA **$881,586.** convert aluminum plant to aircraft PLANT, TORRANCE, CALIF. Douglas Aircraft Co., 827 Lapham St., El Segundo, Calif. Bids Aug. 26. CD 8/27.

▲ **George A. Fuller Co.,** 3445 W. 8 St., Los Angeles, Calif. CA **$1,500,000.** rein.-con. Junior SEMINARY, VAN NUYS, CALIF. Roman Catholic Archbishop of Los Angeles, 1531 W. 9 St., Los Angeles, Calif. Bids Aug. 28. CD 8/22.

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—BUILDINGS

Mass., Brookline—HEALTH CENTER—B.A. 9/23— Town, Dpt. P. Health, c/o Bd. Selectmen, Town Hall, public health center, Harvard and Pierce Sts. $523,000. Plans deposit $50, refundable, Jas. H. Ritchie & Assoc., 135 Clarendon St., Boston, archts. CD 7/23/51.

N. H., Dover—HOSPITAL—B.A. 9/25—City, Robt. Price, mgr., City Hall, altering to Dover City Hospital, Fed. Proj. N. H. 27, $65,000. Plans deposit $100 refundable. Extended date. Irving W. Hershey & Assoc., Dover Rd., Durham, archts. CD 8/14.

Mass., Ayer—SCHOOL—B.A. 9/30—Housing & Home Finance 346 Broadway, New York, N. Y., Proj. Mass 51 Fed 1-A elementary school, Fort Devens, $300,000. Plans deposit $25, Downer & Root, 165 Newbury St., Boston, archts. CD 5/1.

† **Mass., Northampton**—BUILDING—B.A. 10/7—Veterans Admin., Munitions Bldg., Wash., D. C., alterations to Bldg. 1 operating suite and clinics for Veterans Admin. Hospital, Proj. 1-4180.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **MAINE**—State Hy. Comn., State House, Augusta,

The Bridge Constr. Corp., 341 Water St., Augusta, Me. CA **$1,254,597**. b. conc. 9.902 mi. F. A. Proj. FI 01-2 (1), Richmond and Gardiner;

W. H. Hinman, Inc., North Anson, Me. CA **$309,465**. b. conc. 3.276 mi. F. A. Secondary Projs. Nos. S-0188 (1), S 0189 (1), S. A. Hy. No. 3 and 134, Winthrop. Bids Sept. 3. CD 8/16.

▲† **Gil Wyner, Inc.**, 12 Newland St., Malden, Mass. CA **$3,576,000**. barracks, mess facilities, Naval Air Station, Spec. 31256, BRUNSWICK, ME. First Naval Dist., 495 Summer St., Boston, Mass. CD 8/22 under LB.

▲† **Jefferson Constr. Co.**, 75 First St., Cambridge, Mass., CA. **$1,497,198**, STORAGE BATTERY bldg., Naval Shipyard, Spec. 30307, Noy 29525, PORTSMOUTH, N. H. P. Wks. Office, First Naval Dist., 495 Summer St., Boston, Mass., Bids June 20. CD 6/24 under LB, under Public Buildings.

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

Charles Callahan Co., 69 Zeigler St., Roxbury, Mass. LB **$97,356**, est. $108,000. Repair Ashley Ave. Bridge, Chicopee. Bids Sept. 2. CD 8/19.

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Mass.,

Construction Rentals, Inc., 1125 Page Blvd., Springfield, Mass. LB **$141,217**, est. $157,000. hy., Springfield. Bids Sept. 2. CD 8/19.

Martin J. Kelley Co., Inc., 75 Stedman St., Jamaica Plain, Mass. LB **$517,665**. concrete deck Broadway Bridge over channel, Fort Point, BOSTON, MASS. City, Dpt. Wks., City Hall Annex, Boston, Mass. Bids Sept. 4. CD 8/19.

BUILDINGS

LOW BIDS AND CONTRACTS

Oxford Paper Co., Rumford, Me. Owner Builds. Est. **$500,000**. BLEACHERY, RUMFORD, ME. CD 8/29.

▲ **David Nassif Co.**, 500 Statler Bldg., Boston, Mass. Separate Contracts. Est. **$10,000,000**. Unit No. 1, market TERMINAL 1st of 12 or more buildings, Rutherford Ave. adjacent to B. & M. R. R. tracks between State Prison and Sullivan Sq., CHARLESTOWN, MASS.

▲ **George A. Fuller Co.**, 11 Beacon St., Boston, Mass. CA est. **$1,000,000**. Freshmen COMMONS AND UNION BLDG., WILLIAMSTOWN, MASS. Williams College, Dr. Jas. P. Bacter, 3rd pres., Williamstown, Mass. CD 4/18.

▲ **J. Slotnik Co.**, 99 Chauncey St., Boston, Mass. LB **$1,633,000**. est. $850,000. Junior High School, Burncoat St. near Rexhame Rd., WORCESTER, MASS. City, School Dpt., 32 Franklin St., Worcester, Mass. Bids Sept. 5. CD 8/13.

Central Engineering & Constr. Co., 155 Main St., Pawtucket, R. I. CA **$82,000**. concrete block WAREHOUSE addn., Allens Ave., PROVIDENCE, R. I. The Texas Co., 135 E. 42 St., New York, N. Y.

† **P. Wks. Office**, Bldg. 2, Naval Base, New London, Conn., rejected bids Aug. 19, Torpedo Shop imprvs. Bldgs. 20 and 155, NOY 72408, Spec. 33602, NEW LONDON, CONN. CD 8/14.

MIDDLE ATLANTIC

BIDS ASKED—BUILDINGS

▲ **N. Y., Shrub Oak**—HIGH SCHOOL—B.A. 9/22—Bd. Educ., Central School Dist. 1, Towns of Yorktown, Cortland, Somers, Carmel and Putnam Valley in Shrub Oak Central School, Rt. 6, Shrub Oak, general contr., heating and ventilating, plumbing, sanitary and electrical work for Junior-Senior High School on Rte. 6. $1,650,000 appropriated. Plans deposit $50 general constr. $25 each mechanical. Extended date. Frederic Wiedersum, 450 Seventh Ave,. New York, Zone 1, archts. CD 8/28.

▲ **Pa., Morrisville**—SCHOOLS—B.A. 9/25—Lower Makefield School Dist. Au Morrisville, 2 addns., Makefield Elementary School, paving, sidewalks, curbs and gutters,. $600,000. Pennell & Wiltberger, 1201 Chestnut St., Phila., engrs; Elementary School addn. $600,000. Albert C. Micklewright, 72 Ewing St. Trenton, N. J., archt. for both jobs. CD 2/1.

N. Y., New York—HOUSING—B.A. 9/30—New York City Housing Auth., 63 Park Row, Zone 7, general const. and foundations heating and ventilating; electric work; plumbing; furnishing and erecting elevators for Jefferson Houses, Proj. No. NY 5-16, Sect. I, incl. Bldgs 1 to 6 inclusive, as well as the boiler room, coal storage garage, community center and childrens center in area bounded generally by W. 115 St., 1st St., E. 113 St. and 2d Ave., Manhattan Boro. Plans deposit $75 general const. $25 elevators. Extended date. CD 8/25.

† **D. C., Wash.**—MEDICAL CENTER ADDNS.—B.A. 10/2—U. S. Eng., First and Douglas Sts. N. W., Wash., 25, D. C., additions to animal house—Bldg. 83-A and miscellaneous medical facilities in main bldg. at Walter Reed Medical Center, ENG. 0-080-53-20—(18). Extended date. CD 8/29.

† **N. J., Fort Dix**—BOILER PLANT—B.A. On or About 10/23—U. S. Eng., 121 N. Broad St., Phila., 1, Pa., constr. boiler plant, ENG 36-109-53-12. CD 8/18.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany,

Potter-DeWitt Corp., Pavilion, N. Y. LB **$1,226,786**. est. $1,229,000, 3 span steel deck girder bridge, grading, etc. 1.56 mi. Sect. C, of Lake Ontario State Parkway from Naitou Rd. southeasterly to Long Pond Rd., Monroe Co.;

The Lane Constr. Corp., 37 Colony St., Meriden, Conn., LB **$1,169,412**. est. $1,374,000, railroad grade separation structure, two hy. grade separation structure stream bridge, 1.19 mi. access road, etc., grading, draining 0.96 mi. Thruway, sect. of New York Thruway between Oneida and Verona, Madison and Oneida Counties.

D. W. Winkelman Co. Inc., Heffernan Bldg., Syracuse, N. Y. LB **$1,888,505**. est. $1,893,000, 450 ft. span deck girder bridge, hy. grade separation structure, etc. 80 mi., paving 400 ft. twin 25 ft. concrete arteries of Thruway, Van Vleck Rd. Connection, reconstruction .46 mi. Baldwinsville-State Fair Rd. between Warners and Rte. 370, Onondaga Co.;

D. A. Collins, Mechanicville, N. Y. LB **$1,508,975**. est. $1,761,000, 623 ft. deck truss bridge to carry the New York State Thruway over Normanskill, incl. paving .12 mi. of Thruway approaches, etc. Albany Co. Bids Sept. 4. CD 8/13.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany,

Louis Argenio, Inc., 383 Broadway, Newburgh, N. Y. LB **$145,130**. est. $166,000, b. conc. 3.39 mi. R. C. 52-87, Marlboro-Cedar Hill Cemetery, S. H. 5176, Milton-Marlboro, S. H. 5114, Ulster Co.;

C. D. Murray Co. Inc., Lafayette Bldg., Syracuse, N. Y. LB **$1,456,332**. est. $1,583,000, b. conc. reconstr., Rte 15, partially on new alignment, from New York-Pennsylvania State Line northeasterly to point 1½ mi. south of Presho, incl. const. 2 bridges, Steuben Co.;

The Lane Constr. Corp., 37 Colony St., Meriden, Conn., LB **$4,132,907**. est. $5,276,000, c. conc. paving 0.98 mi. previously graded Geneva Lake Front Arterial, incl. grade separations structures at New York Central R. R. and at Main St. Crossing, Ontario Co.;

Tuckahoe Constr. Co. Inc., 116 Columbus Ave., Tuckahoe, N. Y. LB **$1,562,074**. est. $1,566,000, b. conc. reconstr. 7.29 mi. Rte. 52, partially on new alignment from Liberty westerly to Youngsville, incl. 4 bridges. Sullivan Co.;

received no bids Sept. 4. c. conc. paving 0.98 mi. previously graded Geneva Lake Front Arterial, incl. grade separations structures at New York Central R. R. and at Main St. Crossing, est. $1,241,000. Ontario Co. Bids Sept. 4. CD 8/13.

DELAWARE—State Hy. Dpt., Dover;

John Julian Constr. Co., Elsmere, Del., LB **$300,530**, c. conc. 0.846 mi. Maryland Ave. from S. Broom to West Front Sts., Cont. 855, New Castle Co.;

Empire Constr. Co., 31 S. Calvert St., Baltimore, Md., LB **$171,205**, grading, draining 2.138 mi. Lancaster Pike (Gap Rd. to Pennsylvania Line), Cont. 755, New Castle Co. Bids Aug. 29. CD 8/14.

A. J. Ellis, 1826 Bladensburg Rd. N. E., Wash., D. C., LB **$221,423**, Bid B, trunk watermains between 2 and Adams Sts. N. W., **Wash., D. C.** Sanitary Engr. District Bldg., Wash. D. C. Bids Aug. 28. CD 8/14.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Charles T. Rohleder**, 600 Schuylkill Ave., Phila. Pa., CA. **$1,190,392**. Penn Ridge HIGH SCHOOL bldg., BLOOMING GLEN, PA. Upper Bucks Co. Joint School Auth., Perkasie, Pa. Bids Aug. 6. CD 8/15 under LB.

C. J. Goodwin, 6201 Station St., Pittsburgh, Pa., CA, **$100,000**, 1 story, 50x180 ft., block industrial WAREHOUSE, Shaler Twp. near ETNA, PA. B. Lassmann & Sons, Oliver Bldg., Pittsburgh, Pa. Chas. Roberts 5991 Center Ave. Pittsburgh, Pa., archt.

Guy Miller, 1518 Robinson Blvd., Pittock, Pa., LB, **$964,629**, 100 HOUSING Units, F. A. Housing Proj. 609, incl. 7 apartments, MCKEES ROCKS, PA. Allegheny County Housing Auth., County Office Pittsburgh, Pa. Bids Aug. 28. CD 8/8.

Brownsville Constr. Co., Coal Rd., Brownsville, Pa., CA **$100,000**, 1 story, 53x85 ft., brick, concrete SERVICE BLDG., NEWELL, PA. General Chemical Co., Newell, Pa.

▲ **Thomas & Groshon, Inc.**, 5141 Chestnut St., Phila., Pa., Separate Contracts. **$2,100,000**. RESIDENTIAL development, Pennypacker Gardens, PHOENIXVILLE, PA.

Land & Simmons Co., 3922 Hickory Ave., Baltimore, Md. CA 1 story, 40x200 ft., masonry truck TERMINAL and office, 1200 E. Fort Ave., BALTIMORE, MD. Kane Transfer Co., 2116 Fifth St. N. E., Wash., D. C., Ross, Walton & Madden, 3510 Rhode Island Ave., Mt. Rainer, Md., archts.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

† **La., Shreveport**—UTILITIES—B.A. 10/9—U. S. Eng., 300 Broadway, Little Rock, Ark., Job No. AFB 52-ACRP-AF utilities, gas, water and sanitary sewerage Barksdale Air Force Base, Eng. 03-050-5316.

† **La., Shreveport**—CENTRAL TELEPHONE EXCHANGE—B.A. 10/16—U. S. Eng., 300 Broadway, Little Rock, Ark., Job. No. AFB 51-ACRP-AF central telephone exchange, Barksdale Air Force Base, Eng. 03-050-53-18.

BIDS ASKED—BUILDINGS

La., Luling—OFFICE—B.A. 9/24—Lion Oil Co., c/o Curtis & Davis, archts., 822 Perdido St., New Orleans, industrial office, $300,000.

N. C., Chapel Hill—PSYCHIATRIC WING—B.A. 10/1—University of North Carolina, Chapel Hill, psychiatric wing at University Hospital. Approx. $500,000. Plans deposit $50. H. Raymond Weeks, Durham, N. C., archts. CD 5/31.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Byrne Organization, Inc., 117 W. 21 St., Norfolk, Va. LB **$160,031**. Precision radar theodolite tracking station Wallops Island, LANGLEY FIELD, VA. National Advisory Comm. for Aeronautics, Langley Field, Va. CD 11/16/51.

† **Norfolk Dredging Co.**, Campostella Wharf, Norfolk, Va., CA, **$45,000**, dredging Cape Fear River, CIVENG 31-075-53-1, NORTH CAROLINA. U. S. Eng., 308 Customhouse, Wilmington, N. C. Bids Aug. 20. CD 8/4.

† **William S. Smith Constr. Co.**, Box 876, Jacksonville, Fla., CA. **$114,224**, public works maintenance bldg. No. 81, NOY 71533, Cecil Field, JACKSONVILLE, FLA. Dpt. Navy, Officer in Charge of Construction, Box 365, Naval Base, Charleston, S. C. Bids Aug. 29. CD 8/13.

Joseph Jurisich, 338 N. Peters St., New Orleans, La. LB **$147,609**. bulkhead exten. to Bayou Custine, St. Tammany Parish, LOUISIANA. State, Dpt. P. Wks., State Office Bldg., Baton Rouge, La. Bids Aug. 26. CD 8/13.

Barber Bros. Co., P. O. Box 629, Baton Rouge, La. LB **$501,312**. street paving, LAFAYETTE, LA. City, Lafayette, La. Bids Aug. 26. CD 8/11.

J. V. Schickli Bros., 13 and Oak Sts., Louisville, Ky. CA **$69,000**. Street connecting Winter Ave. and Grinstead Dr., LOUISVILLE, KY. Bd. P. Wks., City Hall, Sixth and Jeerson Sts., Louisville, Ky. Bids Aug. 21, awarded Sept. 2. CD 6/1/51.

BUILDINGS

LOW BIDS AND CONTRACTS

English Constr. Co., Main St., Altavista, Va., CA **$887,400**, Robert E. Lee HIGH SCHOOL addns., alterations, STAUNTON, VA. Staunton School Bd., Staunton, Va. Bids Aug. 1. CD 8/20 under LB.

Yeamans Development Co., Yeamans Park, North Charleston, S. C. Owner Builds. **$600,000**. 97 RESIDENCES, CHARLESTON, S. C.

Daniel Constr. Co., 429 Main St., Greenville, S. C. CA Approx. **$500,000**. WAREHOUSE, WALLACE, S. C. J. P. Stevens Co., Wallace, S. C.

† **Jackson & Brittain**, 224 W. Bay St., Savannah, Ga., CA. **$247,853**, addnl. SHOP bldgs., MACON, GA. P. Wks. Office, Macon Naval Ordnance Depot, Macon, Ga.

R. P. Farnsworth & Co., Inc., 1515 S. Salcedo St., New Orleans, La. CA **$86,000**. LAUNDRY, BATON ROUGE, LA. Baton Rouge General Hospital, 3600 Florida St., Baton Rouge, La.

Michael H Reilly, 123 S. Patrick St., New Orleans, La. LB **$385,753**. community RECREATION BLDG., GRETNA, LA. Jefferson Parish Community Center and Playground Dist., 4402 Jefferson Hy., Gretna, La. Bids Sept. 3. CD 8/13.

Perrilliat-Rickey Constr. Co., 1530 S. Rendon St., New Orleans, La. CA est. **$100,000**. WAREHOUSE, NEW ORLEANS, LA. Southern Scrap Material Co., 421 N. Carrollton St., New Orleans, La.

▲ **F. W. Owens Co.**, 119 N. 5 St., Louisville 2, Ky. CA Est. Approx. **$1,000,000**. 3 story rein.-con., brick St. Thomas College, Brownsboro Rd., LOUISVILLE, KY. Roman Catholic Diocese of Louisville, c/o D. X. Murphy & Bros., archts., Louisville Trust Bldg., Louisville, Ky. E. R. Ronald & Assoc., 554 S. Third St., Louisville 2, Ky., engrs.

Polston & Robertson, Lafayette, Tenn., CA. **$545,000**. HOSPITAL, MANCHESTER, TENN. Coffee County, Manchester, Tenn. Bids Aug. 26. CD 9/3 under LB.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **O., Lima**—B.A. 9/23—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., constr. paved opened storage areas, vehicle test track, main access road, concrete apron at Lima Ordnance Depot, Eng. 46-022-53-4.

Ill., Cairo—NATURAL GAS SYSTEM—B.A. 9/29—City, Dick Shoulders, mgr. Caire Public Utility Comn., 902 Commercial Ave., Caire, natural gas sys. Bids 8/25, rejected. CD 8/6.

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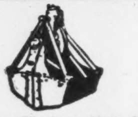

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8642 Pulaski Highway, Baltimore 21, Md.
Phone: Essex 2233

Ill., Nokomis—B.A. 9/29—City, Div. A, sewage treatment plant, incl. pumping station, primary sedimentation tank, trickling filter, secondary sedimentation tank, digester, sludge drying beds and all necessary piping, equip. and appurtenances; Div. B, 12- to 18-in. outfall sanitary sewers, manholes, appurtenances. Plans deposit $30. Farnsworth & Conley, 314 Unity Bldg., Bloomington, consult. engrs. CD 12/11/46.

BIDS ASKED—BUILDINGS

Ill., Wateman — SCHOOL — B.A. 9/24 — Bd. Educ., D. E. Stitzek, supt. Schools, 1 story, brick, concrete schools. $300,000. Extended date. Leroy Thompson, 355 Congdon Ave., Elgin, archts. CD 8/8.

Mich., Fremont—HOSPITAL—B.A. About 9/25—Gerber Memorial Hospital, Fremont, 2 story, brick, steel hospital addn. $550,000. Fugard, Burt, Wilkinson & Orth, 520 N. Michigan Ave., Chicago, Ill., archts. CD 1/28/52.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Scully Bros., Ludlow Ave. and B. & O. R.R., Cincinnati, O. CA **$62,731**, est. $65,000. resurf. New Haven Rd. from village of Harrison to Oxford Rd.;

James E. Roach Co., 1076 W. 71 St., Cincinnati, O. CA **$137,939**, est. $122,508. exten. Westwood-Northern Blvd. from Boudinot Ave. to North Bend Rd.;

O'Connell & Sweeney, Inc., 1640 Lionel Ave., Cincinnati, O. CA **$351,327**, est. $366,914 imprv. North Bend Rd. from Kirby to Betts Aves.;

John R. Jurgensen Co., Kemper and Mosteller Sts., Sharonville, O. CA **$98,894**, est. $97,805. imprv. Galbraith Rd. from Hamilton Ave. to west corp. line of North College Hill, CINCINNATI, O. Hamilton Co., Court House, Cincinnati, O. Grand total $650,891. Awarded Sept. 2. CD 6/16.

INDIANA—State Hy. Comn., Indianapolis,

McMahan Constr. Co., Rochester, Ind., LB, **$247,620**, est. $301,946, bit. conc. 0.528 mi. b. conc. wid'n., resurf. 9.616 mi. State Rd. 13 from junction with U. S. Rd. 24 NE. of Wabash to south of State Rd. 114 SW. of North Manchester, Wabash Co.; LB **$237,289**, est. $242,647, b. conc. resurf. 10.7 mi. U. S. Rd. 35 in Winamac and north of north junction with S. R. 10 to Knox, Pulaski and Starke Counties;

Ralph Rogers & Co., Inc., S. Adams St., Bloomington, Ind., LB, **$328,567**, b. conc. wid'n., resurf. 9.545 mi. State Rd. 45, Owensburg, Greene Co.;

Middle West Roads Co., Noblesville, Ind., LB, **$195,226**, est. $243,220, bit. coated aggregate resurf. 14.046 mi. State Rd. 25 from Lafayette to Delphi, Tippecanoe and Carroll Counties;

Hipskind Drainage Co., 1725 Winter St., Fort Wayne, Ind., LB, **$255,911**, est. $308,239, conc. base wind., 8.701 mi. bit. coated aggregate resurf. 11.791 mi. State Rd. 43, West Lafayette, Tippecanoe and White Counties;

Calumet Paving Co., Zionsville, Ind., LB, **$604,058**, est. $695,314, grading, c. conc. 42.98 mi. State Rd. 41, Patoka Gibson Co.

rejected bids Aug. 26, bit. coated aggregate pavement 0.265 mi. bit. coated aggregate resurf. 8.617 mi. State Rd. 55, Fowler, Benton and Newton Counties. CD 8/13.

August B. Johnson, Inc., Flint, Mich. CA **$44,876**, general contract pumping station, alterations, imprvs.;

Wickes Boiler Co., 515 N. Washington St., Saginaw, Mich. CA **$51,828**. boiler, FLINT, MICH. City, Water Dpt., Flint, Mich. CD 10/30/51.

BUILDINGS

LOW BIDS AND CONTRACTS

The Triton Co., 1539 Cedar Ave., Cincinnati. O. Owner Builds. **$950,000.** 70 brick HOMES, 790 sq. ft. each, Joseph Court, Laboiteaux and Centerridge Aves., CINCINNATI, O. J. H. Sanders, 1539 Cedar Ave., Cincinnati, O., archt. Joseph Allen, c/o owner, engr. Awarded Sept. 3.

Sylvan Estates, Section Three. Indianapolis, Ind., Owner Builds, **$600,000**, 50 two and three bedroom HOMES in northeast INDIANAPOLIS, IND.

▲ **Arnold Lies Co.**, 1515 New York Ave., Aurora, Ill., CA, **$1,150,510**, 4 story, bsmnt., face brick, concrete HOSPITAL, AURORA, ILL. Mercyville Sanitarium, Aurora, Ill. Awarded Aug. 28. CD 7/31, under LB.

Contempo Homes, Morris Strasner, 23060 Seneca St., Oak Park, Mich. Owner Builds. Est. **$600,000.** 52 brick ranch HOMES, Seneca and Oak Park Blvd., OAK PARK, MICH. Beneicke & Lorenz, 15826 James Couzens Hy., Detroit, archts.

Charlson Constr. Co., Lycast St., Detrit, Mich. CA, **$550,000.** 2 story, bsmnt., brick, steel James L. Madison Elementary School, Grove and 20 Sts., WYANDOTTE, MICH. City, Wyandotte, Mich. Bids Aug. 4. CD 7/16.

Campbell Constr. Co., 9401 Michigan Ave., Detroit, Mich. CA Est. **$90,000.** 1 story, 80x120 ft., masonry FACTORY, 8 Mile Rd., DETROIT, MICH. Accurate Stamp Co., 6030 E. Eight Mile Rd., Detroit, Mich. Hurless E. Bankes, 2317 Elmhurst St., Detroit, Mich., archt.

Knight Newspapers, Inc., 321 Lafayette St. W., Detroit, Mich. Owner Builds. **$120,000.** brick, steel publishing PLANT alterations, Lafayette West, DETROIT, MICH.

Fisher Body Div. General Motors Corp., 6231 St. Antoine St., Detroit, Mich. Owner Builds. **$255,000.** brick, steel FACTORY, alterations, 101-271 West End North, DETROIT, MICH.

Baker, VanderVeen, DeYoung & Kraker, 3640 Clyde Park SW, Grand Rapids, Mich. CA Est. **$300,000.** 2 story, brick, concrete SCHOOL, Cedar and State Sts., STANTON, MICH. Stanton Rural Agricultural School, E. M. Adams, secy., Stanton, Mich. Bids Aug. 22. CD 8/4.

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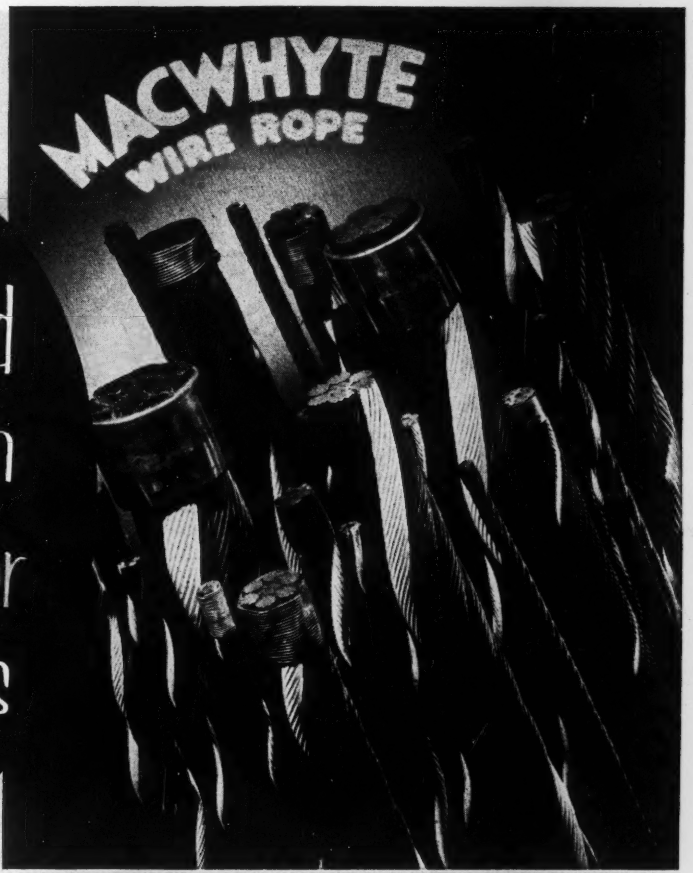

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PRESIDENT

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MANY THANKS FOR YOUR PROMPT SERVICE AND EXCELLENT CO-OPERATION.

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WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **S. D., Rapid City**—B.A. 10/9—U. S. Eng., 1709 Jackson St., Omaha, dock refueling facilities and fuel oil storage Rapid City Air Force Base, Inv. 25-066-53-44. CD 11/12/51.

Ia., Greenfield—B.A. About 3/1—City, E. E. Stowell, city clk., c. conc. paving, etc. various streets. $125,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **City,** G. R. Arneson, city purch. agt., City Hall, Minneapolis, Minn. Day Labor. Total est. **$3,000,000,** raising 2 bridges over Mississippi River to give clearance for Upper Harbor development, construct concrete bridge, Lowry Ave. N. MINNEAPOLIS, MINN. CD 1/3/47.

† **Jack Boyne Constr. Co.,** 900 9 Ave., Council Bluffs, Ia., LB, **$71,105,** repairing Council Bluffs Levee Sys. and Agricultural Unit L-627-624 Inv. 25-066-53-47, IOWA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Aug. 29. CD 9/5, under LB.

Commonwealth Electric Co., 1901 Y St., Lincoln, Neb., CA. Approx. **$217,000,** 31.0 mi. 69KV transmission line LeMars, Junction to Rock Valley;

Evans Constr. Co., Early Ia., CA. Approx. **$187,000.** 26.75 mi. 69 KV transmission line from Storm Lake to Odebolt, IOWA. Iowa Public Service Co., Orpheum-Electric Bldg., Sioux City 4, Ia. CD 8/20.

E. J. Fischer, 4134 Westminster Place, St. Louis 8, Mo. LB **$229,268.** est. $235,000. sanitary sewer exten. incl. 30,061 ft. 8 to 30 in. sewer, 139 manholes, 2 lift stations, 1,550 lin. ft. 6 in. c.i. pipe forcemain, NORMANDY (St. Louis 21, P. O.), MO. Normandy Sanitary Sewer Distr., St. Louis Co., Raymond M. Dobson, pres., Bd. Trustees, 7500 Natural Bridge Rd., Normandy 21, Mo. Bids Sept. 4. CD 8/19.

ARKANSAS—State Hy. Dept., Little Rock, rejected bids Aug. 29, re-locate Hy. 7, at Russellville, Pope Co.; work on Hy. 95, at Clinton, Van Buren Co. CD 8/21.

† **John Coghlan,** Rolla, N. D. LB **$148,616.** Fort Berthold Indian reservation roads, Inv. 32-015-52-58, NORTH DAKOTA. U. S. Eng., Fort Lincoln, P. O. Box 300, Bismarck, N. D. Bids Aug. 21.

† **Peter Kiewit Sons Co.,** Omaha National Bank Bldg., Omaha, Neb. CA **$570,475.** addnl. roads, railroads, Rapid City Air Force Base, Eng. 25-066-53-35, RAPID CITY, S. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. CD 9/3 under LB.

Dupsky & Ball, Wayne, Neb., CA, **$285,715,** transmission project, lines and sub-stations, in Antelope and Knox Counties NEBRASKA. North Central Nebraska Rural Pub. Power Dist., Creighton, Neb. Bids Aug. 21. CD 8/6.

Francis P. Orshek, Inc., Fremont, Neb., CA, **$605,149** sewers FREMONT, NEB. City, Fremont, Neb. Bids Sept. 2. CD 8/19.

Dobson Bros. Constr. Co., 512 First National Bank Bldg., Lincoln, Neb., LB, **$133 269,** completing 11 arterial resurfacing projects, LINCOLN, NEB. City, City Hall, Lincoln, Neb. Bids Aug. 26. CD 7/14.

▲**Sisco Electric Co.,** Amarillo, Tex., LB **$928,736,** est. $975 000 150 mi. 69 kv electric transmission line;

B-Line Constr. Co., First Natl. Bldg., Oklahoma City, Okla. LB **$531,967.** est. $550,000. 7 sub-stations, Caddo Co., OKLAHOMA, Western Farmers Electric Co-operative, Anadarko, Okla. Bids Aug. 26. CD 8/15.

Earl W. Baker & Co., Bethany, Okla. CA **$146,730,** est. $150,000. resurf. West Ave. from Reno to NW 63 St., BETHANY, OKLA. Oklahoma Co., Court House, Oklahoma City, Okla. Art Marvel, Court House, Bethany, Okla., co. engr. Awarded Aug. 30.

R. R. Ryan, 1705 N.W. 5 St., Oklahoma City 5, Okla. CA **$98,872,** est. $100,000. resurf. S. Walker Rd. from 59 St. to county line, OKLAHOMA CITY, OKLA. Oklahoma County, Court House, Oklahoma City, Okla. Awarded Aug. 30. CD 12/18/51.

† **Steinberg & Son,** 2111 S. Harwood St. Dallas, Tex., LB **$115,857.** est. $300,000 H R R C administration bldg. Goodfellow Air Force Base, SAN ANGELO, TEX. U. S. Eng., 100 W. Vickery St., Fort Worth, Tex. Bids Aug. 29. CD 7/31.

City, City Hall, Military Plaza, San Antonio, Tex., Force Account. **$150,000.** 9 mi. addnl. street surf., in Harlandale and South San Antonio, SAN ANTONIO, TEX. J. L. Dickson, Ch. P. Wks. Engr. CD 9/2.

† **Brittain & Gibbins.** 4540 Belknap St., Fort Worth, Tex., CA, **$124,213,** dump disposal and drainage sys., Sheppard Air Force Base, Eng 34-066-52-53, WICHITA FALLS, TEX. U. S. Eng., Box 61, Tulsa, Okla. Bids Apr. 29. CD 5/8, under LB.

COLORADO—State Hy. Dpt., 518 State Office Bldg., Denver,

Alger Constr. Co., 1865 Garland St., Lakewood, Colo., CA, **$161,451,** est. $146 240. oil processed surf. 2.91 mi. State Hy. 149 between South Fork and Wagon Wheel Gap, S 0117 (1) Mineral Co. Bids Aug. 26, awarded Aug. 27. CD 8/14.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Charles F. Vatterott & Co.,** 10259 St. Charles Rock Rd., St. Ann 21, Mo. Owner Builds. est. **$3,500,000.** 500 RESIDENCES in San Fernando Hills subdivision on U. S. No. 66½ mi. west of Florissant Rd., FLORISSANT, MO.

Murch-Jarvis Constr. Co., 718 Locust St., St. Louis, Mo. CA Approx. **$125,000.** Bindery BUILDING, JEFFERSON CITY, MO. Von Hoffman Corp., 109 S. 9 St., St. Louis, Mo. Russell Mullgardt. Schwarz & Von Hoefen, 721 Olive St., **St. Louis, Mo., archts.**

Rau Constr. Co., 2409 Harrison St., Kansas City, Mo. Owner Builds. **$450,000.** 42 DWELLINGS, High Dr. and West 75 Terrace, KANSAS CITY, MO.

Jones-Kissner Constr. Co., 706 Chestnut St., St. Louis 1, Mo. CA est. **$100,000.** general contract, brick, steel, concrete truck TERMINAL Incl. 1 story, bsmnt., 42x160 ft. office, 83x360 ft. dock, 60x293 ft. garage, a 32x33 ft. service station, Broadway and Calvary Ave., ST. LOUIS, MO. Be-Mac Transport Co., Inc., 1316 B. 14 St., St. Louis, Mo. Bids Aug. 18. CD 8/11.

C. Rallo Contg. Co., Inc., 5000 Kemper Park, St. Louis 9, Mo. CA est. **$100,000.** 1 and 2 story, 100x200 ft., 34x100 ft., brick, concrete WAREHOUSE and OFFICE, 5010 Kemper St., ST. LOUIS, MO. National Life Insurance Co., Montpelier, Vt. Preston J. Bradshaw & Assoc., 1800 Olive St., St. Louis, Mo., archts.

Foster-Smetana Co., 4360 Nicholas St., Omaha, Nebr., CA, **$90,000,** steel WAREHOUSE AT OMAHA, NEB. Ceco Steel Products Co., 5601 W. 26 St., Chicago, Ill. H. S. Peterson, c/o owner, engr.

Anchor Development Co., National Bank of Topeka Bldg., Topeka, Kan. Owner Builds. Est. **$800,000.** 73 HOUSING units, OLATHE, KAN.

J. L. Williams, Geo. Hillyer & Chris Hubert, Bellaire, Tex., Owner Builds, **$550,000,** Job No. 3, 55 DWELLINGS, BELLAIRE, TEX . CD 7/8.

Dresser Engineering Co., Tulsa, Okla., CA, **$850,000** Gasoline PLANT, near DUMAS, TEX. Kerr-McGee Oil Co., Dumas, Tex. CD 9/3.

Dresser Engr. Co., Masonic Bldg., Tulsa, Okla., CA, Approx. **$850,000.** natural gasoline PLANT, near ETTER, TEX. Kerr-McGee Co., Kerr-McGee Bldg., Oklahoma City, Okla., Awarded Sept. 2.

Leslie F. Crockett Constr. Co., Box 4036, Austin, Tex., CA, **$639,990,** 47,500 sq. ft., elementary SCHOOL, FORT HOOD, TEX. Community Facilities Service of Home & Finance Agency, 1024 T & P Bldg., Fort Worth, Tex. Bids Aug. 2. CD 9/3, under LB.

Bob & Buck King, 4112 Fannin St., Houston, Tex., Owner Builds, **$525,000,** Project No. 2, 75 DWELLINGS, HOUSTON, TEX. CD 7/3.

The Fairworth Co., 1932 North Blvd., Houston, Tex., Owner Builds, **$370,000,** 30 DWELLINGS, Part of Project 4, HOUSTON, TEX. CD 4/23/51.

C. W. Hickman, 6716 Hempstead Rd., Houston, Tex., Purchase and Hire, Sub-contracts, **$345,000,** 45 DWELLINGS, out of Unit 3, HOUSTON, TEX. CD 9/20/51.

Jim West Building Co., 226 Winkler St., Houston, Tex., Owner Builds. **$360,000,** 36 DWELLINGS, HOUSTON, TEX. CD 5/23.

▲ **Wells-Greenan-Williams & Dunlap,** 1100 Main St., Dallas, Tex., LB **$3,506,007,** construct, manage, finance, 418-unit Housing project, LB **$79,385,** street const. and asph. paving; LB **$61,421,** outside electric distr. sys., street and area lighting; LB **$57,000,** water lines, facilities; LB **$66,215,** sanitary sewers; LB **$65,150,** natural gas distr. sys. Inv. No. Eng 29-005-53-8 in Reese Air Force Base. LUBBOCK, TEX. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Aug. 28. CD 7/29.

Centex Constr. Co. Inc., c/o owners, CA. Approx. **$325,000,** 40 DWELLINGS, SAN ANTONIO, TEX. Ire L. Rupley and Tom Lively, 4911 Greenville St., Dallas, Tex. CD 8/19.

† **Maddin & Larkin,** Box 5615, Bossier City, La., LB **$120,882,** DUNNAGE MILL at Texarkana Ordnance Plant, Red River Arsenal. Inv. No. Eng 34-066-53-6. TEXARKANA, TEX. U. S. Eng., Box 61, Tulsa 2, Okla. Bids Aug. 28. CD 7/30.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Wash., Whidbey Island**—WAREHOUSE, etc.—B.A. 10/2—P. Wks. Officer, Thirteenth Naval Dist., 1611 Wheeler St., Seattle, 1 story, 20x407 ft. supply warehouse, 201x209 ft. storage and shop, 201x209 ft. aircraft maintenance hangar, 261x302 ft. aircraft maintenance hangar, all rein.-con., Ault Field, Spec. 35601. Plans deposit $160. CD 4/26/51.

† **Washington**—SWITCHBOARD — B.A. 10/7 — Bureau Reclamation, Dpt. Interior Bldg. 53, Denver Federal Center, Denver, Colo., furnishing, del. f. o. b. cars shipping point or f. o. b. cars Quincy, Wash., distr. switchboard for Babcock Pumping Plant, Columbia Basin Proj., Spec. DS 3789. L. N. McClellan, ch. engr.

† **Oregon**—B.A. 10/9—U. S. Eng., City-County Airport, Walla Walla, Wash., installing non-embedded parts of turbines, governors, fishway controls, etc., McNary Dam, Inv. 53-17. Extended date. CD 8/26.

† **Washington**—B.A. 10/23—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, 2 passenger elevators for intake structure and powerhouse at Chief Joseph Dam, Inv. 53-13. CD 9/12/44.

Calif., Hemet—B.A. On Or About 11/1—Eastern Municipal Water Dist., Nemet, 2nd pipe line, 20,000 lin. ft. 36- to 54-in. pipe for water distr. sys. CD 3/24.

BIDS ASKED—BUILDINGS

▲ **Calif., Los Angeles**—HOME ECONOMICS—B.A. 9/30—University of California, 405 Hilgard Ave., 3 story, rein.-con. home economics bldg. $1,000,000. Austin, Field & Fry, 2311 W. 3 St., Los Angeles, archts. CD 7/21.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

ARIZONA—State Hy. Comn., 17 Ave. and Jackson St.,

Western Constructors, Inc., 31 W. Jefferson St., Phoenix, Ariz., LB **$443,793,** grading, draining, select material, aggregate base, bit. plant mix 4¼ mi. Tucson-Nogales Hy. Pima Co. R. C. Perkins, c/o owner, engr. CD 6/12.

ARIZONA—State Hy. Dpt., 17 Ave. and Jackson St.,

Ashton Building Co., Tucson, Ariz., CA. **$122,830,** 5 span continuous 4 girder bridge, Sahuarita Bridge, Tucson-Nogales Hy., Pima Co. Bids Aug. 8. CD 8/1.

ARIZONA—State Hy. Dpt., 17 Ave. and Jefferson St., Phoenix,

Harry Hagen, Globe, LB, **$126,923,** 9 span concrete bridge and 4 multiple span concrete box culverts, approaches, Gila Co.

† **Bureau Reclamation,** Dpt. Interior, Coulee Dam, Wash., cancelled bids to have been opened Sept. 9, altering Pump P 3, Grand Coulee Pumping Plant Columbia Basin Proj., Spec. DC 3773, WASHINGTON. CD 9/4.

† **Roy L. Bair,** W. 1220 Ide St., Spokane, Wash., CA, **$695,062** Sch. A, apron paving, utilities, Fairchild Air Force Base, Eng. 45-165-53-3, SPOKANE, WASH. U. S. Eng., City-County Airport, Spokane, Wash. Bids Aug. 20, awarded Aug. 29. CD 8/27, under LB.

▲† **Parker-Schram Co.,** Builders Exchange Bldg., Portland, Ore., CA. **$1,113,682.** Schedule 1, clear and construct Big-Eddy-Troutdale 200 kv line; CA **$1,030,309,** Schedule 2, clear and construct Big Eddy-Troutdale 300 kv line, Wasco, Hood River, Clackamas and Multnomah Counties. OREGON. Bonneville Power Admin., 827 N. E. Oregon St., Portland, Ore. Bids July 22. Awarded Sept. 4. CD 7/28 under LB.

† **Delle-Cogenel, Inc.,** 230 Park Ave., New York, N. Y., LB, **$109,500,** Sch. 1, three 230,000 volt circuit breakers; Sch. 2, $109,500, three 230,000 volt. alternate circuit breakers for Folsom & Nimbus Power plants, American River Div. Folsom Unit, Central Valley Proj. DS 3749, CALIFORNIA. Bureau Reclamation, Dpt. Interior Bldg. 53, Denver Federal Center, Denver, Colo. Bids July 31. CD 7/3.

† **Willamette Iron & Steel Co.,** 2860 N.W. Front Ave., Portland, Ore., LB, **$158,370,** 18 radial-gate hoists for spillway at Nimbus Dam, Central Valley Proj., American River Div., Spec. DS 3758, CALIFORNIA. Bureau Reclamation, Dpt. Interior, Bldg. 1 A, Denver Federal Center, Denver, Colo. Bids Aug. 26. CD 8/6.

† **Cogenel Inc.,** 230 Park Ave., New York, N. Y., LB, **$315,000,** three circuit breakers for Folsom switchyard, Central Valley Proj., American River Div., Spec. DS 3765, CALIFORNIA. Bureau Reclamation, Dpt. Interior, Bldg. 1 A, Denver Federal Center, Denver, Colo. Bids Aug. 26. CD 8/6.

† **Campbell Constr. & Equipment Co.,** 465 10 St., San Francisco, Calif., LB, **$241,441,** 250 trailer sites, utilities, Parks Air Force Base, Cal 8-D-1, PLEASANTON, CALIF. Public Housing Admin., 1360 Mission St., San Francisco, Calif. Bids Aug. 26. CD 8/13.

BUILDINGS

LOW BIDS AND CONTRACTS

Bessonette & Garf, 613 E. Jackson St., Medford, Ore., CA. **$697,350.** Three SCHOOL addns., ASHLAND, ORE. School Dist. No. 5, Ashland, Ore., Stakes & Allyn, Hughes Bldg., Portland, Ore., archts. Awarded Sept. 2.

Smith-Phillips Co., 7402 S. W. Macadam St., Portland, Ore., CA. **$643,333.** 16-room George Atkinson elementary SCHOOL, PORTLAND, ORE. School Dist. No. 1, 631 Clackamas St., Portland, Ore. Bids Aug. 27. Awarded Sept. 2. CD 9/4 under LB.

A. C. King, P. O. Box 1902, Fresno, Calif., CA **$587,597,** const. Jefferson and Hamilton Elementary SCHOOLS, King Co.; HANFORD, CALIF. Hanford Elementary School Dist., Wesley P. Hull, supt., Hanford, Calif. Bids Aug. 18. Awarded Aug. 21.

▲ **S. E. Onorato, Inc.,** 220 Bush St., San Francisco and **W. & B. Realty Co.,** Los Angeles, Calif., (Joint) CA 33 year lease 4% of gross receipts (Min. of $1,225 monthly) 933 car GARAGE to be constr. by Haas & Hayne, 275 Post St., San Francisco, Calif. St. Mary's Underground GARAGE, **San Francisco, Calif.** Recreation and Park Comn., city of San Francisco, 500 Golden Gate Ave., San Francisco, Calif. CD 8/13, under LB.

ALASKA

BIDS ASKED—HEAVY CONSTRUCTION

† **Alaska**—POWER PLANT IMPRVS.—B.A. 9/30—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., portable oil purifier and drying oven for Eklutna Power Plant; DS 3770; air compressors for Eklutna Power Plant, DS 3756, Eklutna Proj. Extended date. CD 8/13.

† **Alaska**—HOUSING—B.A. 10/1—U. S. Eng., 3013 Arcade Bldg., Seattle 1, Wash., fourteen 2-story 24x 175 ft. frame bldgs. with concrete bsmnt., each to house 8 families, with utilities to serve family quarters and hospital area. ENG 95-507-53-4. Plans deposit $25. CD 9/11/51.

CANADA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Alexandra Constr. Ltd., 10436 81 Ave., Edmonton, Alta., CA, **$997,367,** water, sewer work, underground steam distr. sys., headquarters bldg., R. C. A. F. Station, EDMONTON, ALTA. Govt. of Canada, Defence Constr. (1951) Ltd., 400 Kensington Bldg., Winnipeg, Man. CD 3/3/48.

Dominion Bridge Co. Ltd., Lachine, Que., CA. Approx. **$1,000,000.** standard hangar and workship at Air Base, NAMAO, ALTA. Defence Const. Ltd., Kensington Bldg., Winnipeg, Man. K. F. Hurst, Regional Engr. Owners. Awarded Aug. 30.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Principal Investments Ltd.**, 67 W. Richmond St., Toronto, Ont., Owner Builds, **$1,000,000**, SHOPPING CENTER at Six Points, ISLINGTON, ONT.

Thomas Constr. Co., Water St., Galt, Ont., CA **$518,350** brick, steel, concrete district high SCHOOL, ST. MARYS, ONT. St. Marys District High School Bd., St. Marys, Ont. Bids Aug. 19, awarded Sept. 2. CD 7/34.

Argo Constr. Co., Ltd., 660 W. Ste. Catherine St., Montreal Que, CA, **$400,000**, COTTAGES on Sunny Acres BAIE D'URFE (Postal District Montreal), QUE. Syndicate, c/o Argo Constr. Co., Ltd., 660 W. Ste. Catherine St., Montreal, Que. D. F. Labensold, 6312 Clanvanald Ave., Montreal, Que., archt.

Lavut & Perlini, 1074 Bever Hall Mill, Montreal, Que., Owner Builds, **$450,000**, 3 story, bsmnt., 70x146 ft. rein.-con., brick, APARTMENT, MONTREAL, QUE. C. Grenier, 170 Genevna Crescent, Mount Royal, Que. archt.

Proposed Projects——

WATER SUPPLY

▲ **O., Ashtabula**—City, City Hall, **$1,200,000** bond election Nov. 4, sewage treatment plant. CD 3/20.

O., New Philadelphia—City, sewage disposal plant on 13-acre site along Tuscarawas River south of here. **$597,000**, Alden E. Stilson & Assoc., 209 S. High St., Columbus, consult. engrs. CD 1/31/44.

O., Toledo—City, City Hall, water softening equipment incl. chemical storage bldg., Collins Park filter plant, **$280,000**. Total est. $650,000, Finkbeiner, Pettis & Strout, 518 Jefferson St., consult. engrs. George Van Dorp, city water comr. CD 12/21/51.

Okla., Bixby—City, voted **$100,000** bonds, wells, 4 mi. c.i. lines. C. C. Pate, 2212 20 St., Tulsa, consult. engr. CD 2/12/51.

Okla., Purcell—City, **$274,000** bond election Sept. 30, reservoir and water plant exten. R. W. Delaney, Ada, consult. engr. CD 5/27.

Tex., Commerce—City, defeated bonds Aug. 29, water storage tank and tower, **$50,000**; WW sys. rehabilitation, **$45,000**; water mains and distr. lines, **$40,000**. J. M. Lloyd, 1620 S. Sneed St., Tyler, consult. engr.

Tex., Houston—Harris Co. Water Control & Imprvt. Dist. 37, 608 Scanlon Bldg., water mains, distr. lines, **$425,000**; water supply storage, **$400,000**. M. T. Garrett, Sr., c/o Garrett Eng. Co., 5008 Almeda St., conslt. engr. CD 8/21.

▲ **Wyo., Casper**—City, City Hall, defeated bonds expansion and imprvts. municipal water system. **$1,500,000**. CD 7/16.

SEWERS, WASTE DISPOSAL

Tex., Denison—City, voted bonds, sewage disposal plant, **$375,000**; sanitary sewer collection lines and existing sys. rehabilitation, **$175,000**.

Tex., Houston—City, City Hall, voted bonds No. 1 incinerator, **$350,000**; No. 2, incinerator, **$300,000**; No. 3, incinerator, **$340,000**, CD 8/7, storm sewers, **$700,000**, CD 8/11.

Tex., Houston—Harris Co. Water Control Imprv Dist. 37, 608 Scanlan Bldg., sanitary sewer collection lines, **$350,000**; disposal plant, **$375,000**; near here. M. T. Garrett, Sr. c/o Garrett Eng. Co., 5008 Almeda St., Houston, consult. engr. CD 8/21.

BRIDGES

OHIO—State Hy. Dpt., Columbus,
Pike Co.—bridge over Scioto River on Rte. 50; bridge on Rte. 124 over Scioto River; strengthening 2 other bridges on U. S. 50 one on Ohio 73, Ohio 124 and Ohio 348 all vicinity of atomic energy plant. **$600,000**. Samul O. Linzell, hy. dir.

▲ **O., Hamilton**—City, Mayor George Radcliffe, viaduct at South Hamilton crossing, **$2,000,000**. CD 11/11/43.

▲ **O., Youngstown**—Comrs. Mahoning Co., Court House, repair Market St. Bridge, **$800,000**, repair Oak St. Bridge; repair Lincoln Park Bridge; Center Street Bridge; West Avenue Bridge; repair and repaint other bridges. Total est. **$2,000,000**. CD 7/3.

▲ **Tex., San Antonio**—City, City Hall, railway bridge or grade separation Victoria St. crossing **$500,000**; railway bridge or grade separation E. Commerce St., **$650,000** railway bridge or grade separation W. Commerce St., **$500,000**; railway bridge or grade separation E. Houston St., **$500,000**; railway bridge or grade separation S. Flores St., **$350,000**; railway bridge or grade separation Guadalupe St., **$450,000** J. L. Dickson, c/o owner, engr. CD 12/20/51.

STREETS AND ROADS

▲ **FLORIDA**—State Road Dpt., Tallahassee,
Hillsborough Co.—10½ mi. imprvs. on State Road 60, **$600,000**; also relocation Route 301 between State Rd. 600 and point 3½ miles north, **$675,000**;

Manatee Co.—imprv. 11 mi. hy. from Palmetto north to State Road, 62, **$660,000**.

Nassau Co.—imprv. 12 mi. hy. from south of Hilliard to Georgia State line. **$875,000**.

Pasco Co.—2½ mi. new road from Owensboro to Hernando Co. line. **$100,000**.

AIRPORTS

▲ † **O., Columbus**—COLD STORAGE BLDG.—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., plans by Peterson, Hoffman & Grow, engrs. and archts., 520 Spitzer Bldg., Toledo, cold storage bldg., crash and fire station, 8 squadron operations bldgs., academic bldg., structural fire station, guard house, service club, dental clinic, Lockbourne Air Force Base, **$1,750,000**.

O., Minford—AIRPORT—Comrs., Scioto Co., Court House, Portsmouth, $400,000 bond election Nov. 4 airport, 14 mi. northeast of Portsmouth, **$800,000**. CD 9/2.

Tex., Laredo—RUNWAY—City, runway for Laredo Air Force Base, **$300,000**. CD 8/1/50.

▲ † **Va., Dam Neck**—FACILITIES—P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, plans by Sturgeon, Clark & Buhr, consult. engrs. and archts., Midtown Bldg., Wards Corner, Norfolk, addnl. facilities incl. dispensary, B.O.Q., security and pub. wks. bldgs., Fleet Air Defense Training Center, **$2,000,000**.

LATIN AMERICA

Mexico, Jalapa—Grayeb Bros., direccion conocido, Jalapa, plans cinema, **$500,000**.

Mexico, Mexico City—Manuel Cava, Luis Moya, 40 Mexico City, plans automobile parking bldg. **$400,000**.

Mexico, Monterrey—Peerless Tisa, S. A. Direccion Conocido, Monterrey, plans pump factory, **$750,000**.

Mexico, Motho Tasquillo—Sria de Recursos Hidraulicos, P. de la Reforma, 69, Mexico City, plans irrigation dam, **$350,000**.

Mexico, Tepexi and Tecali—State Govt. Gen. Rafael Avila Camacho, gov., Palacio Del Estado, Puebla City, Pue., plans roads, schools, **$600,000**.

PUBLIC BUILDINGS

▲ **Calif., Corona**—SCHOOL—Corona Unified School Dist., Corona, **$1,532,062** bond election Nov. 4, school.

Calif., Los Angeles—SCHOOL—Los Angeles City School Dist., 1425 S. San Pedro St., school, 88 St. and Emerson Ave. **$513,000**. A. S. Nibecker, Jr., c/o owner, engr.

Calif., Menlo Park—SCHOOLS—Menlo Park Elementary School Dist., Melville J. Homfeld, supt., 1300 El Camino, Menlo Park, **$850,000** bond election Oct. 9, school addns., for Hillview, Oak Knoll and Encinal Schools. C 2/7/51.

▲† **Calif., Twenty Nine Palms**—BUILDINGS—Dpt. Navy, San Diego, plans by Neptune & Gregory, 152 E. Glenarm St., Pasadena, rein.-con. tilt up buildings to house Regimental Camp Command, Post X, officers mess, theater, etc. **$2,200,000**. CD 8/00.

Colo., Derby — SCHOOL — School District 14, Adams Co., Adams City, plans by Alfred Watts Grand, consult. engr. and archt., Flatiron Bldg., 1669 Broad, Denver, school, **$320,000**.

▲ **Ga., Brunswick** — JAIL — Comrs. Glynn Co., Court House jail, **$2,000,000**.

Ga., Columbus—HEALTH CENTER—Comrs. Muscogee Co., Court House, health center. **$500,000**.

Ga., Savannah—COURT HOUSE—Comrs. Chatham Co., Court House, remodeling courthouse, **$500,000**.

Ga., Macon—SCHOOLS—Bibbs Co. Bd. Educ., Court House, plans by Nick J. Pascullis, Macon, Pierce Avenue School, **$400,000.**, CD 4/16; plans by W. Elliott Dunwoody, Macon, Cross Keys School, **$350,000**. CD 1/22/48.

▲ **Ill., East St. Louis** — HOUSING — St. Clair County Housing Auth., J. E. Hays, exec. dir., 6 St. and Ohio Ave., East St. Louis, 300 unit slum clearance housing for Negroes in area bounded by 10 and 13 Sts., Missouri Ave. and Broadway, **$2,500,000**.

Ill., Evanston—SCHOOL—Evanston Bd. Educ. plans by Perkins & Will, 309 Jackson Blvd., Chicago, Zone 6, grade school, Ashland Ave. and Main St. **$450,000**. CD 4/29.

Ill., Lombardy—SCHOOL—School District 44, Lombardy, plans by Barry & Kay, 53 W. Jackson Blvd., Chicago, Zone 4, three school addns. **$450,000**.

▲ **Ia., Cedar Rapids** — SCHOOL — Independent School Dist., East Side High School Cottage Grove Ave. and Forest Dr.; West Side School, 1 Ave. and 15 Sts., **$7,000,000**. Childs & Smith, 20 N. Wacker Dr., Chicago 6, Ill., archts. CD 9/2.

Kan., Pawnee Rock—SCHOOL—Dist. Bd. Joint Common School Dist. 2, Barton and Pawnee Counties, Pawnee Rock, school, **$600,000**.

▲ **Mass., Leominster** — HOUSING — Leominster Housing Auth., Mayor's Office, City Hall, plans by Frost & Kandzie & Assoc., 60 State St., Boston, 150 housing units, **$1,650,000**. CD 1/30.

Mass., Somerville—GARAGE—City, Mayor's Office, City Hall, plans by John M. Gray Co., 175 High St., Boston; 70,000 sq. ft. masonry city garage, City Yard, **$685,000**. CD 5/5.

Mich., Detroit—MUSIC WING—City, Dr. David D. Henry, pres. Wayne University, 4841 Cass St., plans by Suren Pilafian, 153 E. Elizabeth St. (1st unit) brick, steel, stone music wing, community arts center, Cass, Kirby, Second and Ferry Sts., **$656,000**, Total est. $3,000,000. CD 4/13/51.

Mich., Greenville—SCHOOL—City, Bd. Educ., plans by Roger Allen & Assoc., 1126 Grand Rapids National Bank Bldg., Grand Rapids, brick, steel, concrete high school, Greenhill site. **$700,000**. CD 8/29.

▲ **Miss., Jackson** — SCHOOL — City, City Hall, voted **$2,700,000** bonds, school expansion, 2 Senior High Schools. CD 7/18.

Miss., Yazoo City—PLANT—Yazoo Co., approved **$750,000** bond issue plant expansion, Mississippi Chemical Corp. CD 7/24.

▲ **N. C., Raleigh**—HOSPITAL—Bd. Comrs. Wake Co. Court House, Rex Hospital addn., **$2,167,000**. St. Agnes Hospital addn., **$1,600,000**.

O., Bellaire—LIBRARY—City, public library and community center. **$400,000**.

▲ **O., Dayton**—SCHOOLS—Bd. Educ., 232 N. Main St., Eastmont Park Grade School, south of Xenia Ave. and west of Spinning Rd., **$850,000**; Free Pike area grade school north of Free Pike and east of Overlook Ave., **$710,000**. CD 11/12/51.

O., Dayton—SCHOOL—Bd. Educ., Van Buren Twp., O.D.L. Barnes, supt., elementary school, Wilmington Pike, north and east of Dorothy Lane and opposite Dawn Dr. **$700,000**. CD 5/19.

O., Mount Vernon—SCHOOL—Bd. Educ., Kokosing Valley School Dist. (merging Amity, Bladensburg, Gambier and Howard Dists.), **$668,000** bond election Nov. 4, centralized high school, renovate other bldgs., near here.

▲ **O., Shelby**—POWER PLANT—City, City Hall, imprv. municipal power plant with 7,500 kw turbine generator, house generator addn., 90,000 lb. steam boiler, auxiliary equipment, **$1,797,400**, Wm. Kammerer & Assoc., 1900 Euclid St., Cleveland, consult. engrs. CD 4/24/51.

▲ **O., Toledo**—OFFICE—City, City Hall, and Comrs. Lucas Co., Court House, 5 story, 80x300 ft. city-county office etc., **$3,400,000**. Thomas Witherell, archt. engr. for City Service Dpt. CD 7/7.

O., Warren—SCHOOL—Bd. Educ., Champion Twp., School Dist. R 3, **$400,000** bond election Nov. 4, high and grade school.

Okla., Norman—HOSPITAL—City, plans by Paul Harris, 3107 Gore Blvd., Box 114, Lawton, hospital, **$550,000**. V. V. Long & Co., Colcord Bldg., Oklahoma City, consult. engrs. CD 5/13.

Okla., Oklahoma City—OFFICE—Oklahoma Farm Federation, 716 W. Grand St., plans by Noftsger & Lawrence, 2756 N.W. 23 St., 5 story office, **$600,000**.

Tenn., Memphis—LIBRARY—City, City Hall, plans by Everett Woods, 212 Adams Ave., city library. **$500,000**. CD 2/7.

Tex., Bryan—HOUSING—Bryan Housing Auth., Bryan, plans by Wm. E. Nash, Box 41, Tex. 20-2, 50 low-cost housing units. **$375,000**. CD 9/4.

Tex., Cameron—HOUSING—Housing Auth. of Cameron, plans by John Linn Scott & Assocs., 406 W. 17 St., Austin, 25 brick duplexes (Whites) **$325,000**; 25 frame duplexes (Negroes), **$300,000**. CD 8/15.

Tex., Crane—SCHOOL—Crane Independent School Dist., L. L. Martin, supt., Crane, school. **$325,000**.

Tex., Floydada — POWER PLANT, etc. — City, electric power plant imprvs., expansion, **$200,000**; some addnl. new electric power lines and rehabilitation existing ones, Approx. **$60,000**. Continental Engineers, Inc., 1641 Broadway, Lubbock, consult. engr. CD 4/17.

Va., Fairfax—SCHOOL—Fairfax County School Bd., plans by Robert A. Willgoos, 300 Montgomery St., Alexandria, Sleepy Hollow School, near Seven Corners. **$500,000**. CD 8/29.

Va., Fairfax—SCHOOL—Fairfax County School Bd., plans by Earl B. Bailey, 6915 29 St. N., Falls Church, brick, concrete, masonry negro high school, near here. **$900,000**. CD 4/10.

▲† **Va., Little Creek**—BARRACKS—P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, plans by Woodward, Oliver & Smith, 716-A Boush St., Norfolk, 3 story, architectural concrete 1,500-man barracks, Little Creek Amphibious Base, **$2,600,000**. Knappen, Tippetts, Abbett, McCarthy, 62 W. 47 St., New York, N. Y., consult. engrs.

† **Va., Little Creek**—ADMISSION BLDG., etc.—P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, plans by Woodward, Oliver & Smith, 716-A Boush St., Norfolk, 1 and 2 story, concrete landing craft admission bldg. and operations bldg., NOY 28479, Little Creek Amphibious Base, **$320,000**. Knappen, Tippetts, Abbett, McCarthy, 62 W. 47 St., New York, N. Y., consult. engrs. CD 8/18.

Wash., Seattle—SCHOOL—Highline School District 401, 253 S. 152 St., Highline High School addn. **$411,900**.

Wash., Yakima—SCHOOL—School District 7, Yakima, election Nov. 4, on special levy to aid in financing Junior High School. **$960,000**. J. W. Maloney & J. M. Whitney, Larson Bldg., archts. CD 9/2.

Wis., Milwaukee—LIBRARY—Bd. Regents of State College, Madison, plans by Brimeyer, Grellinger & Rose, 787 N. Broadway, Zone 2, 2 story, bsmnt., 92x165 ft. library, **$750,000**.

GULF PRODUCTS *and* FINE SERVICE

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on Georgia Air Base Project

Dickerson, Inc. of Monroe, N. C., and D. W. Winkelman Carolina Co., Greensboro, N. C., recently completed — well ahead of schedule—improvement of runway facilities at the Hunter Air Force Base, Savannah, Ga. Work involved 1½ million cubic yards of excavation, 180,000 tons of lime rock base, 75,000 tons of hot mix asphalt pavement, and incidental items. Mr. J. M. Nicholson, Vice President of the D.W. Winkelman Carolina Co., was in direct charge of this project.

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GULF

COMMERCIAL BUILDINGS

▲ **Calif., Los Angeles**—HOSPITAL—Cedars of Lebanon Hospital, 4833 Fountain Ave., plans by Pereira & Luckman, 7421 Beverly Blvd., Los Angeles, 2 story, Cedars of Lebanan Hospital addn. **$1,205,000.**

▲ **Calif., Riverside**—TELEPHONE—The Pacific Telephone & Telegraph Co., 740 S. Olive St., Los Angeles, plans by Parkinson, Powelson, Briney, Bernard & Woodford, 410 N. La Brea Ave., Los Angeles, 2 story, rein.-con. telephone company bldg. **$1,000,000.**

▲ **Calif., Stockton**—OFFICE—Owner, c/o P. N. Alexander, 526 N. San Joaquin St., 5 story, office bldg., Fremont and San Joaquin Sts. **$1,500,000.**

▲ **Ill., Chicago** — APARTMENT—225 Chestnut Street Bldg. Corp., c/o Geo. S. Lurie Co., 120 S. La Salle St., Zone 3, plans by Leo S. Hirschfield, 327 S. La Salle St., Zone 4, 23 story apartment, 225 E. Chestnut St. **$3,000,000.**

▲ **Ill., Park Forest**—DEPARTMENT STORE—Goldblatt Bros. Co., 325 S. State St., plans by Loebl, Schlossman & Bennett, 430 N. Michigan Ave., Chicago, Zone 11, 1 story department store, **$1,200,000.**

Md., Glen Burnie—SCHOOL, etc.—Holy Trinity R. C. Church, 103 Baltimore Annapolis Blvd., plans by Harder & Dressel, Ritchie Hy., 2 story, brick parochial school and convent, **$500,000.**

▲ **Mich., Detroit**—RESIDENCE—Jewish Home for Aged, 11501 Petoskey St., plans by Charles N. Agree, Inc., 1140 Book Bldg., brick, steel, concrete residence bldg. and infirmary addn., Petoskey St. **$1,000,000.**

▲ **Mo., Independence**—HOUSES—Blue Valley Development Co., Keith Chasteen, pres. or Earl Manesa, vice pres., 11100 Truman Rd., Platinum Acres, incl. 358 houses, bus center, streets, utilities, on 108 acre tract, N. Liberty, N. River and Kentucky Rds. **$2,000,000.**

O., Dayton—CHURCH—Shiloh Congregational Christian Church, Rev. Fay LeMeadows, Main St. and Philadelphia Dr., plans by Walker, Norwick & Assoc., 12 W. Monument St., church, incl. main auditorium, sanctuary, **$850,000.**

Tex., Amarillo — APARTMENTS — Sunrise Apartments, Inc., 3714 Fillmore St., addnl. frame type apartments, concrete slab fdn. **$360,000.**

Tex., Dallas—SUNDAY SCHOOL—First Presbyterian Church, 407 S. Harwood St., plans by Bennett & Crittenden, 2812 Fairmount St., 5 story Sunday School and Recreation unit. **$425,000.** CD 1/25/46.

▲ **Tex., Dallas** — HOTEL — Statler Hotels, Inc., 7 Ave and 33 St., New York, N. Y., 900-room hotel, **$15,000,000.** Holabird, Root & Burgee, 180 N. Wabash St., Chicago, Ill., consult. engrs. CD 8/18/50.

▲ **Tex., Fort Worth**—SHOPPING CENTER—A. C. & J. T. Luther & Earl Wilson, 6300 Camp Bowie Blvd., Fort Worth shopping center in White Settlement area. **$1,000,000.**

Tex., Houston—APARTMENTS—A. C. Farb & Morris Rauch, 380 Main St., 40-unit apartments, **$300,000.**

▲ **Tex., Houston**—OFFICE, etc.—Houston Bank & Trust Co., 119 Main St., plans by Kenneth Franzheim, 2402 Crawford St., 10 story, bsmnt. office and bank, Main, Fannin, Jefferson and Calhoun Sts. **$2,000,000-$4,000,000.** CD 8/28/51.

▲ **Tex., Houston**—DWELLINGS—H. A. Mittelberger, 3215 Everett St., 50 dwellings, **$450,000;** 35 dwellings, **$325,000;** 32 dwellings in section called "Benbrook," **$300,000.**

Tex., Orange—CHURCH—First Methodist Church, Orange, plans by Homer Stephenson, Orange, church, **$400,000.** CD 8/27.

▲ **Va., Arlington** — APARTMENT—M. T. Broyhill & Sons, 4624 Lee Hy., plans by Corning & Moore, 1726 M St. N. W., Wash., D. C., three hundred and twenty 2 and 3 story, masonry apartment units, **$3,000,000.**

▲ **Va., Woodbridge**—HOUSES—Art Post Realty Co., 601 Belleview Blvd., Alexandria, plans by Charles Lansing, Triangle, 1,000 frame asbestos shingle houses built in sections near here **$9,000,000,** W. M. Kelly, Fairfax Eng. Co., Falls Church, consult. engrs. James Sullivan, c/o owner, engr.

▲ **Wash., Spokane**—HOME—Scottish Rite Masons, W 1108 Riverside, Spokane, home for 100 boys. **$1,000,000.**

▲ **Alta., Calgary**—APARTMENT HOUSES—Syndicate, c/o H. A. Howard, Crown Trust, Calgary, concrete, steel masonry apartment house, Rideau Heights. **$3,000,000.**

▲ **Ont., Toronto**—SHOPPING CENTERS—Principal Investments Ltd., 67 Richmond St. W., shopping center, Danforth Ave. and Kingston Rd., in East York Twp., Toronto suburban area, **$2,000,000;** shopping center, at Dundas Highway, Etobicoke Twp., **$2,000,000.**

▲ **Que., Three Rivers**—OFFICE—Bergerville Estates Ltd., 245 Des Capuchins St., Quebec City, office, Des Forges St. **$2,000,000.**

INDUSTRIAL BUILDINGS

▲ **Conn., Norwalk**—POWER PLANT—Connecticut Light & Power Co., Newington, power plant, Mansesa Island. **$15,000,000.**

▲ **Ill., Chicago** — GARAGES—North Michigan Avenue Assoc., 664 N. Michigan Ave., Zone 11, 5 garages at various locations on near North Side. **$6,500,000.** De Leuw Cather & Co., 150 N. Wacker Dr., Zone 6, consult. engrs.

Ill., Evanston—HEADQUARTERS—Rotary International 35 E. Wacker Dr., Chicago, Zone 1, plans by Maher & McGrew, 626 Grove St., 2 story, bsmnt., 40,000 sq. ft. headquarters bldg. **$750,000.**

Ill., Franklin Park—FOUNDRY—Pyott Foundry & Machine Co., 328 N. Sangamon St., Chicago, foundry, **$500,000.** Lester B. Knight & Assocs., 600 W. Jackson Blvd., Chicago, Zone 6, consult. engrs.

Ill., Joliet—MILL—American Steel & Wire Co., div. U. S. Steel Co., Collins St., wiredrawing mill addn. **$500,000.** American Bridge Co., Div. of U. S. Steel, Gary, Ind., consult. engr.

Ia., Waterloo—PLANT—Armour Fertilizer Works, 350 Hurt Bldg. and P.O. Box 1085, Atlanta, Ga. fertilizer plant, incl. main structure incl. 3 inter-connecting 1 story bldgs., 45,000 sq. ft., 2,000 ft. railroad siding, incl. entrance track. **$200,000.** Fertilizer Works Engineering Organization, c/o owner, consult. engr. (**Correction**—owner). CD 7/11.

▲ **Ky., Drakesboro**—COAL TIPPLE—Paradise Collieries Mine, Drakesboro, coal tipple, etc. **$3,000,000.**

Mass., Boston—WAREHOUSE, etc.—General Fireproofing Co., Dennick Ave. E., Youngstown, O., plans by Perry-Shaw & Hepburn, Kehoe & Dean, 31 St. James Ave., Boston, warehouse and display room Commonwealth Ave. at B. U. Bridge. **$100,000.**

Mich., Bay City—PLANT—Bay City Hardware Co., Bay City, rebuild brick, concrete plant. **$250,000.**

▲ **O., Cincinnati**—WAREHOUSE—Albers Supermarkets, Inc., Spring Grove and W. Mitchell Sts., 300,000 sq. ft. perishables warehouse to serve meat aging, processing center, storage headquarters for frozen foods, product storage, etc. on 46 acre site, Evendale, near here. **$1,500,000.**

O., Toledo—INDUSTRIAL—Howard Crosby, Crosby Realty Co., 717 Madison Ave., will not construct industrial bldg., Manhattan and Wausonoquette Blvds. **$800,000-$1,000,000.** Project abandoned. CD 8/25.

▲ **Tex., Dumas**—PLANT—Kerr-McGee Oil Co., Dumas, natural gasoline plant, near here. **$1,000,000.**

Tex., Fort Worth—PLANT—Anderson Aircraft Co., Camp Bowie Blvd., aircraft parts mfg. plant imprvs. and expansion. **$244,050.**

Tex., Houston—TERMINAL—Strickland Transportation Co., 1310 Morin St., terminal, 13-acre site off Freeway. **$300,000.**

Tex., Houston—INDUSTRIAL—Straus-Frank Co., 4000 Lelland St., plans by Lloyd & Morgan, 4605 Montrose St., 2 story, masonry equipment and appliances industrial bldg. **$200,000.** Walter P. Moore, 4605 Montrose St., Tex., consult. engr.

Tex., Mercedes—SYSTEM BLDG.—Magic Valley Electric Co-operative, Inc., Mercedes, plans by Wm. C. Baxter Pioneer Bldg., Weslaco, masonry system bldg., incl. warehouse, garage, etc. **$250,000.**

Tex., Tyler—PARKING GARAGE—Tyler Hotel Corp., Tyler, plans by Preston M. Geren, consult. engr. and archt., N. P. Anderson Bldg., Fort Worth, masonry, steel parking garage adjacent to Blackstone Hotel, **$150,000.**

Wash., Tacoma—PLANT—American Biscuit & Cracker Co., 1461 Eliot Ave. W., Seattle, 100,000 sq. ft. cracker plant. **$500,000.**

▲ **Que., Roberval**—PLANT—Sulphur Converting Corp., Roberval, plans by J. J. Perrault, 3737 Van Horne Ave., Montreal, sulphur plant, **$3,000,000.** L. E. Burgener, Roberval, engr. CD 4/9.

UNCLASSIFIED

Ala., Mobile—TELEVISION STATION—Giddens & Rester, Downtown Theatre Bldg., television station, **$294,000.** Commercial Radio Equipment Co., 1319 F St. N. W., Wash., D. C., consult. engr.

Calif., Fresno—TELEVISION STATION—McClatchy Broadcasting Co., 21 and Q Sts., Sacramento, television station. **$626,630.** George C. Davis, Munsey Bldg., Wash., D. C., consult. engr. CD 3/2/45.

Calif., Los Angeles—TELEVISION STATION—John Poole Broadcasting Co., Security Bldg., television station, **$392,000.** George P. Adair, 1833 M St., Wash., D. C., consult. engr.

Calif., Oakland—TELEVISION STATION—Tribune Bldg. Co., 13 St. and Franklin St., television station, **$651,000.** E. C. Page, Bond Bldg., Wash., D. C., consult. engr. CD 7/20/44.

Calif., Sacramento — TELEVISION STATION — Harmco, Inc., Hotel Sacramento, television station. **$343,690.** A. D. Ring & Co., Munsey Bldg., Wash., D. C., consult. engrs.

Calif., Sacramento—TELEVISION STATION—KCRA, Inc., 1010 Eleventh St., television station, **$517,890.** Jansky & Bailey, Natl. Press Bldg., Wash., D. C., consult. engrs.

Calif., Sacramento—TELEVISION STATION—McClatchy Broadcasting Co., 21 St. and Q St., television station. **$769,180.** George C. Davis, Munsey Bldg., Wash., D. C., consult. engr. CD 3/2/45.

Calif., Sacramento—TELEVISION STATION—Sacramento Telecasters, Inc., 716 Calif. State Life Bldg., television station. **$417,731.** E. C. Page, Bond Bldg., Wash., D. C., consult. engr.

Calif. San Jose — TELEVISION STATION — Standard Radio & Television Co., 702-10 Commercial St., television station. **$491,350.** George P. Adair, 1833 M St., Wash., D. C., consult. engr.

Conn., Hartford—TELEVISION STATION—Hartford Telecasting Co., Inc., 780 Windsor St., television station, **$866,350.** Jansky & Bailey, Natl. Press Bldg., Wash., D. C., consult. engrs.

Conn., Waterbury—TELEVISION STATION—American Republican, Inc., Box 1627, television station, **$408,760.** James C. McNary, Natl. Press Bldg., Wash., D. C., consult engr.

Colo., Denver—TELEVISION STATION—Aladdin Radio & TV, Inc., 17 and Lincoln Sts., television station, **$440,000.** E. C. Page, Bond Bldg., Wash., D. C., consult engr.

Fla., St. Petersburg—TELEVISION STATION—Tampa Bay Area Telecasting Corp., 901-906 First Federal Bldg., television station, **$501,300.** Commercial Radio Equipment Co., 1319 F St., Wash., D. C., consult. engr.

Ga., Columbus—TELEVISION STATION—Georgia-Alabama Broadcasting Corp., 1213½ Broadway, television station, **$470,000.** A. D. Ring & Co., Munsey Bldg., Wash., D. C., consult. engrs.

Ill., Quincy—TELEVISION STATION—Lee Broadcasting, Inc., 510 Maine St., television station. **$305,900.** E. C. Page, Bond Bldg., Wash., D. C., consult. engr.

Ill., Rockford—TELEVISION STATION—Greater Rockford Television, Inc., c/o Guyer & Smith, 815 Rockford Trust Bldg., television station. **$329,700.** Weldon & Carr, 1605 Connecticut Ave., N.W. Wash., D. C., consult, engrs.

Ill., Rockford—TELEVISION STATION—Rockford Broadcasters, Inc., 109 S. Water St., television station, **$447,000.** Craven, Lohnes & Culver, Munsey Bldg., Wash., D. C., consult. engrs.

Ind., Fort Wayne—TELEVISION STATION—News Sentinel Broadcasting Co., Inc., 201 W. Jefferson St., television station, **$447,900.** Jansky & Bailey, Natl. Press Bldg., Wash., D. C., consult. engrs.

▲ **Ind., Indianapolis**—TELEPHONE LINES—Hoosier Telephone Co., c/o B. O. Vannort Engineers, Inc., engr., 700 S. College St., Charlotte, N. C., telephone lines **$7,000,000.**

Ind., Indianapolis—TELEVISION STATION—Television Indianapolis, Inc., 810 Fletcher Trust Bldg., television station, **$699,350.** Jansky & Bailey, Natl. Press Bldg., Wash., D. C., consult. engrs.

Ind., Indianapolis—TELEVISION STATION—Universal Broadcasting Co., Inc., 1440 N. Meridian St., television station, **$597,980.** George C. Davis, Munsey Bldg., Wash., D. C., consult. engr. CD 7/3.

Mich., Detroit—SWIMMING POOL—City, John J. Considine, gen. supt. Dpt. Parks & Recreation, 1214 Griswold St., concrete outdoor swimming pool, piping, water treatment, Michael Gallagher Playfield, Vernor and St. Jean Sts., **$150,000;** concrete outdoor swimming pool, piping, accessories, water treatment, Lipke Playfield, Van Dyke near 7 Mile Rd., **$150,000;** rein.-con. swimming pool, Norfolk-Wisconsin Playfield, West Side, **$150,000;** rein.-con., swimming pool, chlorination sys., on 35 acre site, Arthur W. O'Shea Playfield, Fullerton and Greenfield Sts., **$350,000;** concrete swimming pool, Lorwyn E. Peterson Playfield, 16 acre site, Greenfield and Curtis Sts., **$150,000.** George R. Thompson, city engr. CD 2/3/49.

Mo., Steelville—TELEPHONE SYSTEM—Steelville Telephone Co., Steelville, rural telephone sys., extens., imprvs., **$503,000.**

▲ **Oklahoma**—GAS PIPE LINE—Oklahoma Natural Gas Co., 624 S. Boston St., Tulsa, 50 mi. 18 in. gas line from Salpulpa to Pryor, **$4,000,000,** W. R. Kubiste, c/o owner, engr.

Tex., Lubbock—TELEVISION STATION—Bryant Radio & Television, Inc., 1803 Broadway, television station, **$342,100.** Weldon & Carr, 1605 Conn. Ave. N.W., Wash., D. C., consult. engrs.

Va., Roanoke—TELEVISION STATION—Times-World Corp., 201 W. Campbell Ave., television station, **$525,000.** George C. Davis, Munsey Bldg., Wash., D. C., consult. engr.

▲ **Wash., Seattle** — TELEVISION STATION — Fisher's Blend Station, Inc., 100 Fourth Ave. N., television station, **$1,115,460.** A. D. Ring & Co., Munsey Bldg., Wash., D. C., consult. engrs.

Wash., Seattle—TELEVISION STATION—Totem Broadcasters Inc., Skinner Bldg., television station, **$645,675.** E. C. Page Bldg., Wash., D. C., consult. engr.

W. Va., Charleston — TELEVISION STATION — Capital Television Inc., Security Bldg., television station **$413,000.** E. C. Page, Bond Bldg., Wash., D. C., consult. engrs.

W. Va., Charleston—TELEVISION STATION—Tierney Co., 1111 Virginia St. E., television station. **$654,500.** Weldon & Carr, 1605 Connecticut Ave. N.W., Wash., D. C., consult, engrs.

W Va., Wheeling — TELEVISION STATION — Tri-City Broadcasting Co., Box 567, Bellaire, O., television station. **$842,100.** William L. Foss, Inc., 927 15 St. N.W., Wash., D. C., consult. engr

Man., Winnipeg—ARENA, etc.—Co-Operative Sports Society, Winnipeg, plans by Moody & Moore, 295 Broadway St., 12,000 seat arena, 15,000 seat stadium near Polo Park, **$500,000.**

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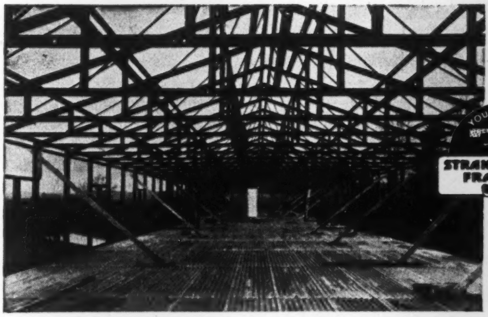

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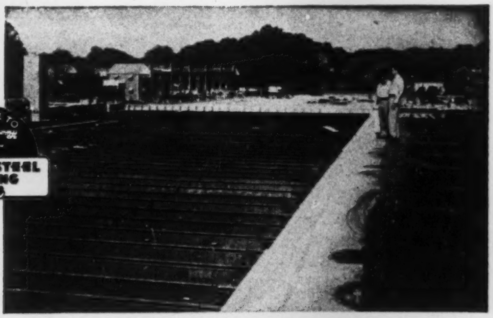

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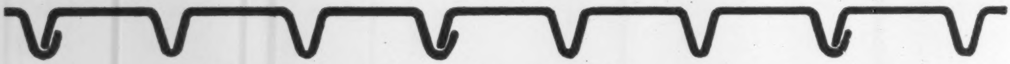

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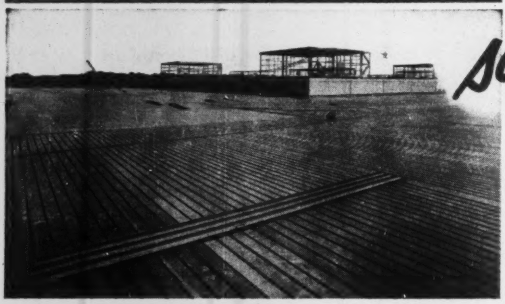

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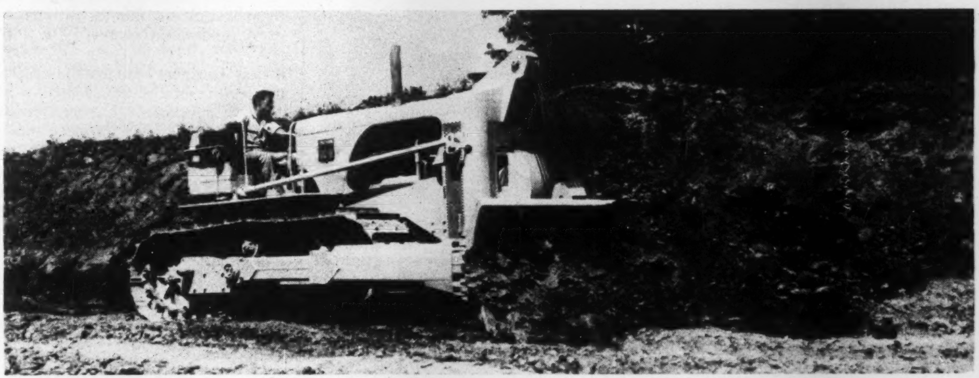


GOUGING OUT a sidehill cut, Oliver Corp.'s OC-18 is equipped with a Heil FT-100 Trailbuilder blade and Heil front power control unit. All hand-operated, the 32,000-lb crawler is a contender in the heavy-duty field.

Oliver moves into big crawler tractor class

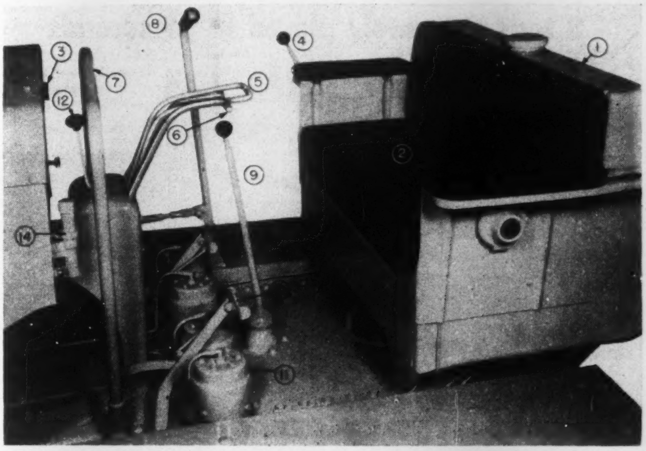
James M. Connolly
Associate Editor

There's a new arrival in the heavy-duty crawler tractor field—Oliver Corporation's new OC 18—which promises to hold its own with the competitive "Big 3" (Caterpillar, Allis-Chalmers and International Harvester) in the construction, logging and industrial fields. While fitting into the pattern of its three big competitive models, the new machine is not, however, designed to surpass them power- or size-wise. As Oliver's Vice President Bill Miles puts it: "It was designed to fit the large general requirements for a heavy rig for construction, general bulldozing, push-loading and all-around tractor work."

Powered by a 6-cyl Hercules DFXE diesel, the rig sports Bosch fuel injectors, is rated at 126 drawbar hp and weighs 16 tons. Although maximum engine hp is 225 at 2,400 rpm, the operational speed set for the OC-18 cuts this down to 179 hp at 1,500 rpm. Torque peak is attained at 900 rpm, allowing plenty of reduction in engine speed for lugging. Belt hp is 149.

• Forerunner out of production—The Oliver Corp's last big tractor development was the Cletrac FDE, brought out in 1945, one year after it bought Cleveland Tractor Co. and took over its line of Cletracs. Its high clearance made it a good machine for logging work, but it met with little success in the construction industry. Operators disliked it, saying that it took too much brute strength for proper operation.

At the road show in 1948, Oliver's Board Chairman Alva Phelps assured his assembled distributors that the company was in the industrial equipment game for keeps and that development and re-tooling funds had already been ear-marked. He prophesied then that the company would soon be in competition with the rest of the heavy-duty crawler tractor manufacturers. The OC-18 apparently



OPERATING CONTROLS on the OC-18 are all hand-controlled with exception of foot parking brakes, one for each crawler. They are: (1) fuel tank, 66 gal capacity; (2) two-man foam rubber seat; (3) instrument cluster; water temperature, oil pressure, ammeter and air pressure gages; (4) friction throttle lever; (5) steering control levers, one for either direction; (6) air brake levers, one for each crawler; (7) clutch bar; pulling back engages clutch and pushing forward disengages it; (8) bulldozer control lever; (9) gear shift for four forward speeds, two reverse; (10) foot parking brakes; (11) pneumatic Roto chambers; (12) air brake lock lever; (13) removable utility compartment with batteries, voltage regulator, switches, air governor and receiver, fuel shutoff, etc.; (14) Chevron cold starting aid.

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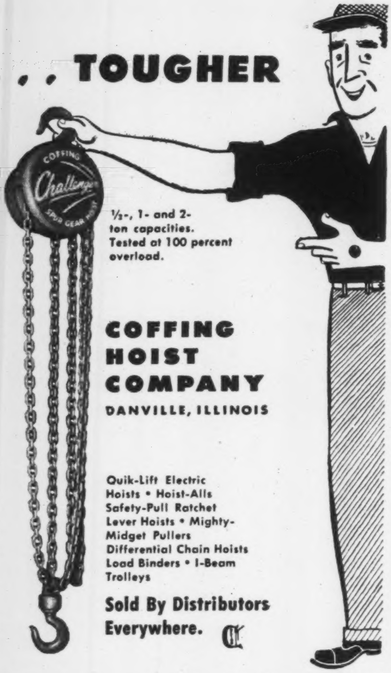

½-, 1- and 2-ton capacities. Tested at 100 percent overload.

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Quik-Lift Electric Hoists • Hoist-Alls
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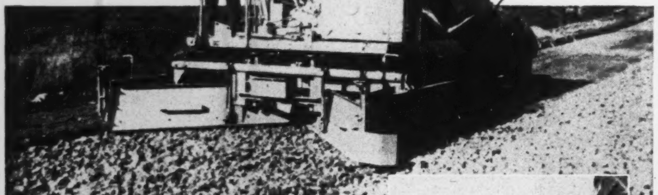

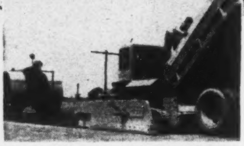

JAEGER Paver-Type AGGREGATE SPREADER

costing half the price of bituminous pavers, did all work of placing 12" base of 3½" stone in 8" courses, loose lay. Averaged 45 seconds to unload trucks, spread 11' strip flush to berm, blend joint and strike off. Quickly adjustable for widths to 12½'. Larger size also available for biggest trucks.

Lays all aggregates, free-flowing bituminous mixtures or plant-mixed stabilized soil — highway and airport base, base and top of secondary roads, parking areas, drives.

See your Jaeger distributor or send for Catalog SPS-1

THE JAEGER MACHINE COMPANY 200 Dublin Avenue
Columbus 16, Ohio

COMPRESSORS • PUMPS • MIXERS • TRUCK MIXERS • CONCRETE SPREADERS, FINISHERS

upholds that prophecy, since it's been undergoing severe tests for 2½ years. Its arrival on the market automatically stops production of the FDE.

• Easy to steer—Perhaps the outstanding feature of the new machine is its ease of operation. The conventional clutch pedal or lever has been replaced by a clutch bar—a heavy pipe in the shape of an inverted U—which engages the clutch when pulled back and releases it when pushed or kicked forward. In fact, all controls are by hand. Except for setting and releasing a foot-controlled parking brake for each crawler, the operator literally needs no feet.

The steering arrangement is reminiscent of throttle control in four-engine bombers (where pilots, by manipulating various combinations of four converging levers, could control inboard, outboard, port or starboard engines, or all four at once, with a slight, effortless movement). A mere turn of the operator's wrist, in the case of the tractor steering levers, will control differential-drive, air-actuated steering with power on both crawlers through all degrees of turning. Minimum turning radius is listed in the specifications as 17 ft, but air brakes can be brought into play to lock either track for a pivot turn when necessity demands.

These air brake levers are located right next to the steering levers, and are tied through linkage setups to the foot parking brakes. If desired, air brakes can be locked also. Steering and air brake levers are interlocked; thus the machine can't be turned with the brakes on.

A compressor on the right hand side of the engine is driven by the fan belt and supplies air for steering and braking. Starting is push-button, all-electric with 24-v power coming from two series-wired 12-v batteries. A Chevron cold-weather starting aid is standard equipment.

• Six speeds—The transmission provides four forward speeds: 1.50, 2.61, 3.76 and 5.45 mph respectively. Reverse speeds are a low of 1.83 and a high of 3.53 mph. Final drive is reduced through a bull gear and planetary gear set to each sprocket which provide lighter torque loads on components of the transmission and differential.

• Maintenance a prime factor, too—When they started out three years ago to design the OC-18, Oliver's chief engineer, H. W. Brock, and his staff had ease of maintenance and operator comfort in mind. An inclosed utility compartment right in front of the operator houses the two starting batteries, voltage regulator, air governor and receiver, switches, fuel shutoff, fuse block, starter button and instrument panel. Any component cane be reached or adjusted through a top cover or the entire unit can be lifted out in toto by removing service lines and six fastening bolts.

The engine, transmission and final drive can also be removed independently with comparative ease. Tap holes at the rear of the case permit outside adjustment of steeering and brake bands. If a power control unit or winch is installed, these adjustments can be made with equal ease from the top. Track and track frame are of entirely new design for Oliver Corp. Bare tractor ground pressure is 7.12 psi; track gage is standard 78 in.; one upper and six lower rollers are contained in each track; ground clearance is 17 in. below the crankcase guard; 22-in. wide grousers and 100-in. length of track-to-ground contact combine to give 4,411 sq. in. of ground contact area.

• **Double sprocket wheels**—A careful look at the drive sprockets will show twice as many teeth as usual, but only every other one is engaged to drive the heavy-duty rig. When these show signs of wear the track links can be shifted one notch to engage the alternate set, thus doubling the life of the original sprocket wheels.

• **Standard features and price**—Standard features include air steering, electric starting with Chevon cold-weather starting aid, crankcase guard, rear wheel rock guard and heat indicator. With these features the bare tractor fits into the less-than-$16,000 class, f.o.b. Cleveland. Lights, air brakes, cab and radiator guard are extras. The Heil Co. supplies bull-dozer attachments shown in the photos. THE OLIVER CORPORATION, 400 W. MADISON STREET, CHICAGO 6, ILLINOIS.

Aluminum used to make new solder

The Aluminum Company of America says a new and ingenious use has been developed for Alcoa aluminum as the principal ingredient in a filling solder. The new item—called "Fil-Soder"—takes 50% less heat than

(*New Products Continued on p. 95*)

"AS GOOD AS NEW"
- after 19 YEARS service!

"My company, in 1932 installed a Sauerman Slackline Cableway purchased from an English agent of Sauerman Bros., Inc. This plant, normally maintained, is as good today as when we bought it. Between 1932 and the end of 1951 it excavated and yielded to the hopper 2,222,783 tons and we expect it to continue producing at this rate for possibly ten more years before it is retired. I give the equipment a high rating for performance. Up to 1952, the capital cost divided by 19 years' output amounts to less than ⅓ cent for each ton handled. Maintenance expense of the machine over this period also has been moderate."

Mr. C. Maw, Director
Stanley Ferry
Gravel Co., Ltd.

SAUERMAN
Slackline Cableway

The excavation and movement of gravel to the screens at the plant of Stanley Ferry Gravel Co., Ltd., Leeds, England, has been a "one man, one machine" job since 1932, handled entirely by the Sauerman Slackline Cableway shown in the picture above.

During this period the Sauerman machine has moved over two million tons of gravel at a capital cost of less than one-third cent a ton, and with a nominal expense for repairs continues to give as good service as when new. Its operating cost is so low the owner wishes it would last forever.

The deposit is tightly packed and contains many submerged swamp trees. Water table is 9 ft. below ground level. Gravel extends to a depth of 30 ft. The material is very abrasive. Altogether, it is a tough test of a machine's power, range and durability.

The Sauerman machine operates on a 750-ft. span from a steel mast 90 ft. high, and soon will have taken out all the aggregate within its reach. The mast will then be moved to a new location approximately 900 ft. from where it now stands. This will be the third move. The first pit excavated by the cableway is behind the plant in the background.

The 150-hp. machine digs and conveys 100 tons per hour, delivering to a cantilevered hopper on the mast. A ropeway conveys the material from the hopper to the screening plant located on a highway 1,000 ft. away. The cableway could produce considerably more than 100 t.p.h., but is limited by the capacity of the ropeway.

This 19-year old installation is just one of many Sauerman installations scattered through every state in the United States and in many foreign countries that have proved wonderful long term investments for their owners, while maintaining large daily output at small expense.

For complete details of the different sizes and illustrations of the varied uses of Sauerman Slackline Cableways, write for new, free 24-page Catalog C.

Rope Haulage
Equipment
Specialists
Since 1909

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DRILLING CONTRACTORS
Diamond and Shot Core Borings
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Foundation Testing for Bridges, Dams and other Heavy Structures
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Manufacturers of Diamond and Shot Core Drills, Accessories & Equipment
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(Since 1915)
FOR • STEEL PLATE LINING • STEEL ENCASEMENT • BUILDING NEW WALLS • LINING WATER RESERVOIRS, TUNNELS AND SEWERS • PLATE LINING OF STEEL STACKS, BUNKERS, DUCTS • REPAIR OF DISINTEGRATED CONCRETE AND MASONRY • CANAL, DITCH AND DRAIN LINING
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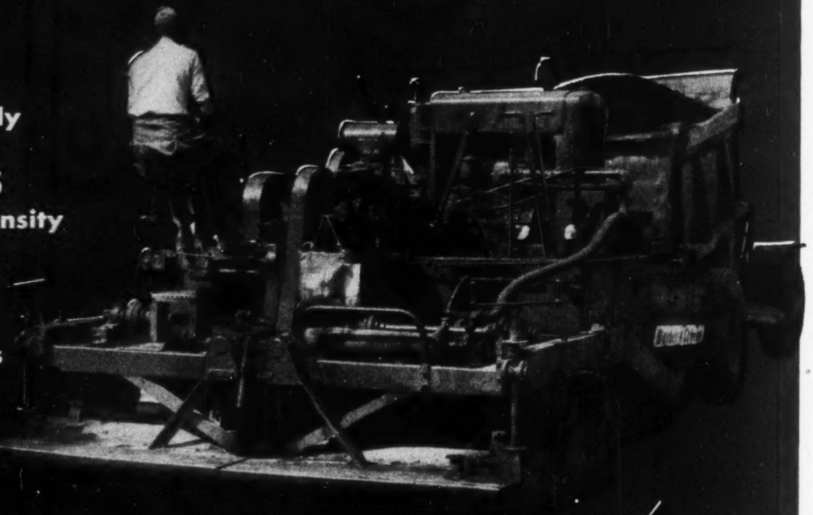
"MAGIC-CARPET" MAKER

SPREADS
Material Evenly

COMPACTS
to Uniform Density

LEVELS
Automatically
Without Forms



THE BARBER-GREENE TAMPING-LEVELING FINISHER

When the job calls for the highest quality bituminous surface, you'll do it best with the B-G Tamping-Leveling Finisher.

With this superbly designed machine, you are able to lay every type of mix — hot or cold — from clay stabilized gravel to high-type sheet asphalt. Whatever type mat you are laying, the B-G Finisher automatically measures the correct amount of compacted material — then simultaneously tamps, levels and strikes off to produce a ripple-free surface that is maintained under rolling and traffic. Because the material is compacted while it is being laid, you are assured of a surface of uniform density. And with the B-G leveling principle you compensate even for abrupt changes in the subgrade.

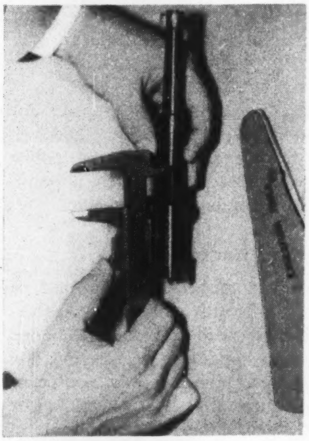
It will pay you to investigate this unequalled, universally preferred method of paving streets, highways, runways, parking lots, tennis courts and similar jobs. You will learn, for example, how the B-G Finisher saves truck time, minimizes rolling and reduces the size of crew. Investigate today!

Barber-Greene

Aurora, Illinois, U. S. A.

tin alloy solder and fills in without fluxing or shrinking, Alcoa claims. It is suitable for all metal filling.

The new type solder is said to build up fast, stay where it is put and not run or drip when applied to an unright surface. No new tools or skills are required in its handling and the solder will stand a 350 degree infra-red bake. Said to take any finish, lacquer or synthetic, it is a suitable material for repairing ferrous and non-ferrous castings. With its low melting point, Fil-Soder does not warp the metal and feathers to a smooth invisible edge. It is available in $\frac{3}{8}$-in. round bars, 12 inches long. Four ounces fill as much space as a pound of other solders. It is a product of the Swiss Laboratory of the ALUMINUM COMPANY OF AMERICA, CLEVELAND, OHIO.



Swedish vernier caliper distributed in U.S.

Toolmakers, inspectors and others who demand accurate measurements will be interested in this model, made by Eskilstuna Tools of Sweden and now available in the United States. The caliper is capable of measuring external, internal and depth dimensions, including core diameters of threads in fractions or decimals of inches. Jaws are lapped parallel.

Tests with the Johanssen plug gage have shown the calipers to be accurate, as claimed. The fitted side has a friction lock. Six inches long, its jaws are $1\frac{1}{16}$ in. deep and overall dimensions are 3 x 8 in. It's sold in this country through MASTER RULE MANUFACTURING CO., 40 MULBERRY STREET, MIDDLETOWN, NEW YORK.

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EDITORIALS

It's better than you think

Civil defense preparation in the United States is by no means as poor as official pronouncements would lead one to believe. The sincere, public-spirited and self-sacrificing citizens who have accepted appointments in both national and local Civil Defense Administrations are, it is true, having the devil's own time in getting volunteers to serve as airplane spotters or to take part in practice alerts. And in their desperation to make a better showing they decry apathy, suggest lack of patriotism and warn of doom. But their real trouble lies in the fact that they are reaching for an objective that is beyond their grasp.

In a large sense, our civil defense organization has developed a megalomania—a mental condition characterized by grandiose delusions. It is a delusion to suppose that large numbers of people will or can take time from their jobs—or from the leisure periods that effective execution of these jobs require—to train themselves on how to act in a disaster that could be real but nevertheless seems remote. Except for a relatively few who like to play at games of this kind or who can keep themselves at a high emotional and patriotic pitch, people cannot be importuned to devote their energies to such extra-professional activities. Thus, it makes little sense to set up citizen cooperation as a goal for civil defense, and then characterize it as a failure when the goal is not attained.

The realistic view of civil defense—and the one that most people would accept if they gave the matter some thought—is that the basic responsibility for being ready when disaster strikes rests with paid public officials, such as the police and public-works supervisors of various kinds. We expect them to have an organization and a plan to cope with emergencies such as fire, tornado or flood. A bombing is merely another emergency. And while it would no doubt be necessary for every citizen to pitch in and help, he would have to operate under official direction—incidentally, as he has done in flood and hurricane disasters before.

Actually, a large amount of this kind of civil defense preparation has already been done. Disaster organizations are ready in many states and cities, the personnel trained as a part of their regular jobs or assigned to such planning as full-time responsibilities. What is more, many private companies, and particularly the vital public utilities, have made a great deal of progress in civil defense planning. The American Telephone and Telegraph Co., for example, in its last annual report, has these reassuring statements to make:

"If bombs should fall . . . auxilliary power plants in telephone buildings insure continuous supply of electricity should normal power fail. Mobile telephones are widely available for emergency use. Precautions are being taken in the larger cities to insure that essential long distance calls can go through even though the main telephone office might be totally destroyed. Stocks of telephone supplies are on hand in all sections of the country.

"Most important of all, hundreds of thousands of skilled telephone men and women are ready to take quick and effective action. Their experience and know-how are . . . a solid and invaluable resource in the nation's defense."

Equally intelligent planning has been done by the electric utilities, by water supply departments and by highway and construction agencies.

All of this supports the contention that we are better off in civil defense preparation than is apparent from the public pronouncements. Moreover, it points the way in which civil defense preparations should be carried out and intensified in the future. Such staff activities of the federal CDA as its air raid training center, its preparation of printed instructions for the ordinary citizen and of recommendations for bomb-resistant building design are essential and proper. But let's have done with the volunteer organization business, and concentrate on helping and encouraging public and private officials who already sense their responsibilities for preparing for a bombing if it comes.

Technology must be honest

Two completely incongruous things happened in August that nevertheless are worth considering together: In Portland, Ore., Former President Hoover reminded engineers of the need for honesty in engineering; and in New York's Borough of Queens, a sewer contractor was charged with dishonest and shoddy work, made possible, it was also charged, through the connivance of engineering inspectors.

Outstanding from Mr. Hoover's talk at the Northwest Engineering Centennial is this statement: "Technology without intellectual honesty does not work. Construction without conscientiousness soon crumbles."

No more wisely stated creed has ever been drawn for those who follow the business of construction, whether as engineer or builder. These two sentences are an inspiration to the honest and a warning to the cheaters.

In this centennial year when the past accomplishments and high ideals of engineering are being held up to public scrutiny, such an incident as the Queens sewer scandal is a challenge for a little soul-searching. How well are our ideals being followed? Is technology always intellectually honest, and is construction continually conscientious? Mr. Hoover reminds us that they should be, and the Queens situation warns that they sometimes aren't. The reminder and the warning should not be forgotten in the century ahead.

Structure designed under direction of Ing. Jose Menendez of Comision de Fomento Nacional; Manuel Ray, Resident Engineer.

Raymond FORGES AN IMPORTANT LINK IN HAVANA-VARADERO HIGHWAY

This graceful reinforced concrete bridge spanning the Canimar River in Cuba was completed by Raymond ahead of schedule. Hailed as one of the most functionally beautiful structures in the Caribbean, the three-span bridge is 115 feet high and has an overall length of 973 feet—a fitting symbol of the wide variety of Raymond activities.

Constructed for Cuban Comision de Fomento Nacional by Raymond Concrete Pile Company of South America

a wholly owned subsidiary of Raymond Concrete Pile Co.

Raymond
CONCRETE PILE CO.

140 CEDAR STREET • NEW YORK 6, N. Y.

Lightest standard truck mixer made, carries 12-ton payload on TIMKEN® bearings

THE lightest standard truck mixer made carries 12-ton payloads of transit-mixed, or ready-mixed concrete, without exceeding state or municipal weight limits.

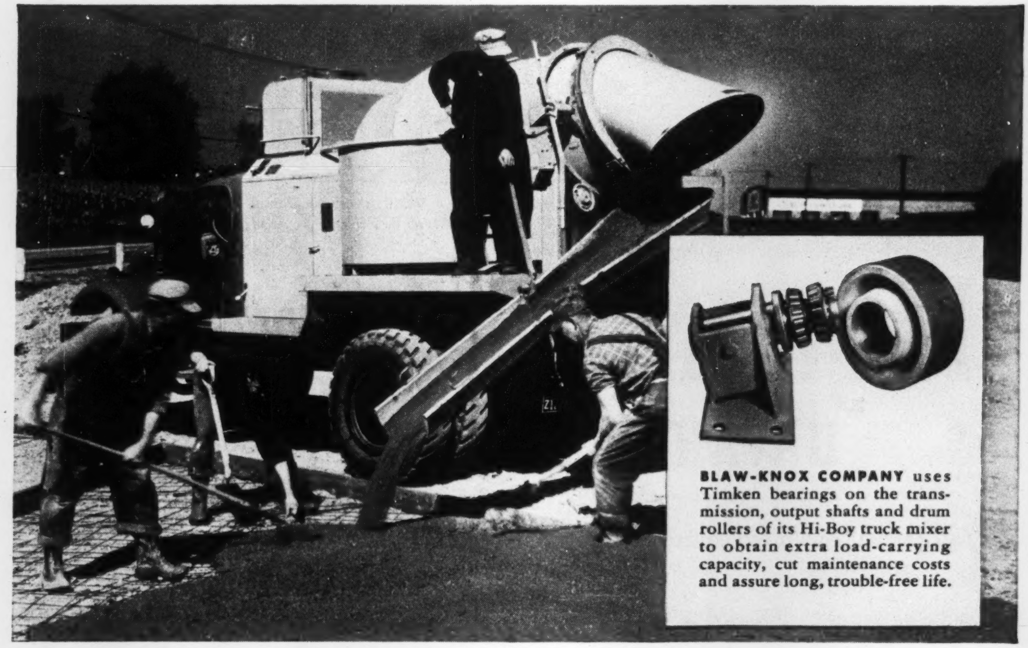
To carry the heavy loads without adding excess weight, this Blaw-Knox Hi-Boy uses a total of 8 Timken® bearings in the transmission, output shafts, and drum rollers. Timken bearings were specified because the line contact between rollers and races gives them maximum load-carrying capacity.

The tapered construction of Timken roller bearings lets them take both radial and thrust loads imposed by the mixing drum. Timken bearings are case-hardened—have hard, wear-resistant surfaces and tough, shock-resistant cores. These bearing features permit truck mixers to operate over rough terrain without fear of breakdowns.

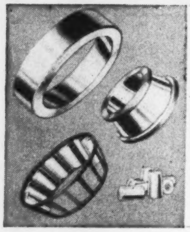
Timken bearings keep moving parts in positive alignment, hold shafts concentric with housings making closures more effective. Lubricant is retained; sand, cement dust, grit and moisture kept out.

You can get all these cost-saving advantages in the equipment you build or buy by just making sure it's equipped with Timken bearings. Always look for the trade-mark "Timken". It's stamped on every Timken bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.



BLAW-KNOX COMPANY uses Timken bearings on the transmission, output shafts and drum rollers of its Hi-Boy truck mixer to obtain extra load-carrying capacity, cut maintenance costs and assure long, trouble-free life.



DESIGN LEADERSHIP

The first Timken tapered roller bearing was produced in 1898. Since then the one-piece multiple perforated cage, wide area contact between roller ends and ribs, and every other important tapered roller bearing improvement have been introduced by The Timken Roller Bearing Company.

The Timken Company leads in: 1. advanced design; 2. precision manufacture; 3. rigid quality control; 4. special analysis steels.

TIMKEN

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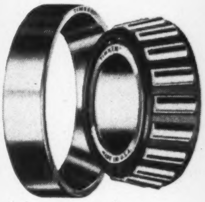
TAPERED ROLLER BEARINGS



NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ BEARING TAKES RADIAL ↕ AND THRUST → ← LOADS OR ANY COMBINATION ✳